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CONTENTS.

"Squire Hotfoot" and "Robin Hood" Address Our Readers Editorially on the Jobber and His Standing in the Trade 105
A Practical Manual of Steam and Hot-Water Heating: XLV. 108
Government Contracts to Be Awarded 110
The Journeyman and His Helper:
What's in a Day's Work? The Rooster and the Plumber. Have You a Grub Stake? 111
Another Batch of ??????'s—Your Stock in Trade .. 112
Annual Shore Dinner of the Master Plumbers of Boston and Vicinity 112
Annual Outing of the Paterson, N. J., Master Plumbers 112
The Range Boiler and Connections: Chapter VII 113
Graber Bros., Salem, Ore. 114
Kitchens and Laundries: Chapter IX 115
Eastern Trade Golf Association Meets at Dunwoodie, N. Y. 116
Annual Outing of Maine Master Plumbers 116
"Domestic Engineering" Cartoon, No. XLVII: "His Satanic Majesty's Gun-Boat 'Cut-Price Contracts' Sunk by 'Business Management'" 117
Questions and Answers:
An Emergency Joint—A Bit of Help from Oregon—What Is an Offset Valve? The Purpose of a Steam Trap—A "Swing" Joint 118
New England Notes 119
Wisconsin Master Steam-Fitters Organize 120
The Metal Market:
Continued Large Export of Copper—Old Iron—Buying Iron for Forward Delivery—Lead—Spelter 120
Among the Wholesalers:
Personal Mention—The Frank Prox Co. Enlarges Its Plant—The Mueller Sewer-Rod—Improvements by the McCrum-Howell Co. 121
Bubbling Heads of Brass and China—The "Buckeye" Water-Lift—"Common-Sense Heating and Sanitary Plumbing"—Specialized Making of Patterns 122
Three Attractive Heating Devices—Catalogs and Pamphlets—Two New Kewanee Books 123
The Cripps Circulator—A "Comet" and a Bungalow 124
Gasoline Storage Outfits—More Hopeful Situation in Chicago—"Pittsburg" Water-Heaters in New Baseball Parks 125
Pacific Coast Letter 126
Classified Advertisements 62
Index to Advertisers 64
"Domestic Engineering" Buyers' Directory 66

"SQUIRE HOTFOOT" AND "ROBIN HOOD" ADDRESS OUR READERS EDITORIALLY ON THE JOBBER AND HIS STANDING IN THE TRADE.

It is gratifying to note the wide-spread interest in our editorial of June 10th on "How Can a Legitimate Jobber Make a Legitimate Profit?" Many letters have been received on the subject, two of the best being published in the following paragraphs, as they practically voice the combined sentiments of the other communications. Both these letters have been written by men holding prominent positions in the trade, men who have made good, and members of the National Association of Master Plumbers.

"Squire Hotfoot" is well-known to you. He is an exceptionally vigorous writer, presenting his reasonings in clear, forceful language. Whether you agree with him or not, at least there is no mistaking on which side of the fence he stands.

"Robin Hood" has evidently been favored by satisfactory service by good jobbers and manufacturers. He is just a trifle critical but he does not lose sight of the main factors in all business-dealings—that of personal honesty and conscientious service.

"Squire Hotfoot" says:

Mr. H. C. from Chicago Town blossoms forth in a terrific tirade against the poor, old jobber. It is the same old story and just as useless as tilting against the wind-mills was in the days of old. The jobber is here to stay. Of that fact there can be no doubt, and while I am under absolutely no obligations whatsoever to any jobber or manufacturer in this broad land, I want to say right now that the jobber deserves a square deal just as much as does anyone else and it is folly to think that the faults of the plumbing business must be corrected and remedied by the jobber. Mr. Plumber, why not set your own house in order?

If the jobber is not toting according to Hoyle, stop buying from him until he does tote fair, and if we master plumbers will stick together we can handle the jobbing situation without any trouble.

We cannot get along without the jobber. It is impossible for any master plumber who is away from the manufacturing cities to carry sufficient stock to handle his business and purchase from the manufacturers direct. You who are located in Chicago might be able to do so, but we who have to depend on uncertain railroad ser-

vice and the loss of time incidental to the transmitting of orders back and forth, would be up against it good and plenty.

The idea of selling for cash only is a relic of prehistoric ages. Go over to France, where the cheque is almost unknown, and see how they have to rustle around with a sack of currency. They do business after a fashion, but it is a darn long ways from the American way of doing business and the Yankee way looks pretty good to yours truly, and also to a whole lot of foreigners who have copied the Yankee methods.

The mail-order business is a most peculiar institution and derives its great growth from the fact that people as a rule think that if they can buy goods direct from the wholesaler they can save a whole lot of money. I am willing to wager anything I have from my bull-pup to the shop that the great majority of people who purchase from the mail-order houses would not purchase the same material from the local store at the same price if they could do so. They would feel that they would be getting stuck with a bunch of junk and you may rest assured that that is just exactly the truth. **Mail-order merchandise is inferior in quality.** The average farmer will send his good money to the mail-order houses in Chi., paying in advance, and will go to the local stores and buy on time, paying for the stuff when the crops come in. Is that a fair deal? Not by a jugful. Yet it is done thousands of times every day, and just as many times we hear the farmer, the country papers and the orators in Congress implore us to help the poor farmer, to keep up the tariff wall, to keep out the unfair competition, to help them make a little more money (to send to the Chicago mail-order houses). I say, not by a dog-gone sight. Let the tariff walls down, give us free trade with Canada, and with every one else for that matter. Let the farmer stand on his own keg, and help the other fellow for a change.

When it comes to the jobber's inability to keep a complete stock at all times, we are trying to make the jobber do the impossible, but I will say, that if H. C.'s old boss placed an order for goods and only got one-half of them, he was trading with a darn poor jobber and he must have been obligated to him or he would have placed his business where it would have been properly cared for.

Let H. C. come to the Twin Cities and he will find that if he does not pay up on the 15th day of the month following the purchase, that he is a gone goose and may as well lock up shop and get out and hustle in a little money. Money talks in the plumbing business in this man's town.

Money may be hard to get for mercantile business, but I know it to be a fact that if a man has the ability to run a business in a successful manner and needs more capital, he can get it without any great trouble, but he must first prove that he can make good by making good.

Taking up the four questions in order, I would say in answer to the first that it is absolutely impossible for the plumber to purchase direct from the manufacturer and if a plumber does so purchase he will sooner or later become a jobber himself with the possibility that he will be a contracting jobber instead of a merchandising jobber and thereby make of himself that which he is trying to eliminate. Number two. No business of any size can be conducted on any such basis, so forget it. Number three. Already applies in the Twin Cities without the $5,000. (What the devil would a man with $5,000 want in the plumbing business anyhow? He would be taken before the Judge of Probate and examined as to his sanity.) Number four is already covered, but with a 30-day limit instead of 90.

Taken all in all, I cannot see that H. C. would get very far with his elimination of the jobbers, therefore, let's get down to business, look the situation square in the face, and call spades by their right names. To start with, did you ever hear of the National Association of Building Managers? Never did, eh? Well, then here is a starter and, believe me, you will hear a whole lot more from them before you are a great deal older. As the name shows, the organization is composed of the men who manage buildings. They are big men, they are men of affairs; they are men who know how to do things and they do them; they oversee the renting, caretaking and repairing of our giant skyscrapers and apartment-houses, and they spell business with capital letters. That's why they go to work at about 9:30 a. m. with a couple of hours for lunch and billiards at the club and are able to motor out to the links for a round of golf after office hours and still be on time for dinner at 6 p. m. Or is it 6:30? Can you do that and run a plumbing business? Hardly!

But, to get down to cases, here is a resolution passed at their last convention, held a few weeks ago in Cleveland: "That the Association endeavor to compel the jobbers of plumbing materials to sell direct to the managers of large buildings, as they consider themselves as big buyers as a whole lot of the master plumbers and they further wish to aid the government in the dissolution of any plumbers' trust." There being nothing to the latter part of their resolution, we will pass it up, and consider the first part only. To this I can only say that it is only a question of time until the jobbers will sell plumbing materials direct to these big buyers, just as they now sell heating materials. I do not think that they will ever tackle the installation part of the job, for the reason that they are not blessed with the gambling spirit and have the good sense to sell the material to the poor misguided plumber who is willing to gamble on the amount of time required for the installation. That is right where the master plumber is lame.

The proper thing to do is for the master plumber to sell plumbing material as any other merchant sells his wares and let the installation take care of itself, to be a merchant master plumber in every sense of the word, with material to sell at certain fixed prices; and when that time does come, the master plumber who has the mercantile instinct will make good just as other men have made good in dry goods, paints, hardware, groceries, meats, etc. When your wife buys dry goods, cloth, buttons, thread, braid and lace, does she ask the dry goods man to make it up for her and give her a price for the complete job? Not much, she buys the material and hires the work done by the day. The same principle applies all the way down the line, until we strike the master plumber and he, poor fool, will not sell any of his wares unless he has a chance to gamble on the installation. I say that the master plumber in so doing is protecting the journeyman and is not getting one bit of thanks for doing it. Your journeymen do not give a tinker's dam for you and you know it. All they want is the job and the money and a chance to shoot it into you. They are not averse to putting in a few licks of an evening for a friend at less money than they will work for you. When you get them to work overtime, they want time and one-half. When they work for a friend they cut off the one and do

it for half wages. Furthermore, the tools they work with, and the material too, comes from your shop or your job and you do not even get a thank you for it.

If we, as master plumbers, will sell to the building managers and to every one else as well and will, as Mr. McCormack says, wipe out the famous Baltimore Resolutions, which are now ready for the morgue, we will begin to make a little money and, furthermore, we will cease to be the stock in trade of the joke-smiths.

There is too much protection to the plumbing business, too much inspection which does not inspect, and too many prehistoric landmarks.

It has been said that the only way to improve the condition of the master plumber is to adopt radical methods. If that be true, what could be more radical than to eliminate the Baltimore Resolutions and change the plumbing business from the contracting field to the mercantile field?

You can purchase lumber, hardware, glass, in fact everything necessary for the construction of a building and hire the labor to install it, or you can let the whole job together. That would tend to show that the builder can get installation-work regardless of the open market and I predict the same thing for the plumbing business. There will always be some people who consider themselves competent to do their own work, and there will always be people who will not bother with their own work but will hire some one they can trust to do it for them.

Why not let the property owner take a few of the risks for awhile? Let them hire the men and look out for their welfare, see that they are protected while at work and that the work is protected so far as the general public is concerned. Let them worry about the union and the non-union men. Let them spend their money getting defective goods replaced, and you will thereby let the master plumber make a little money.

Then too, if the customer wants information about installations, let the master plumber furnish the information and charge for it, just as any other professional man will do, cut out the "no charge for estimates" and "estimates cheerfully furnished," and proceed to make a little money without assuming enough risks to make a man gray-headed or bald-headed at 30 years of age.

A master plumber will take a contract, after guessing at the cost, at a supposed profit of from 10 to 20 per cent and he may perhaps make a few dollars on the job if everything turns out all right. On the other hand, when a prospective customer enters his store and asks the price of a range-boiler, closet, bath-tub, sink, lavatory, or any of the materials in use today, he will be quoted a price about 25 to 200 per cent greater than the cost; and this tends to show his head is level in some places anyhow, but he at once spoils the soup by insisting on guessing how much it will cost him to install the goods, with the result that he spoils a good sale and assumes a loss. Is it right? Is it reasonable? I should say not! It is the height of folly! I say let us sell our material at a known profit and furnish the labor by the hour or the day and by so doing we can obtain the means to secure membership in some good golf club and incidentally be able to sit back at our ease some years hence and tell our children and grand-children of "the way it used to was when daddy was a boy."

In conclusion, think before you criticize these lines. Consider the signs of the times, and even if you disagree with the writer, as many of you will do, just paste this in your little red book, and look at it again in 10 or 20 years, and you may then compare this writing to the "writing on the wall" as described so graphically in the Holy Bible.

The Squire.

And thus speaks Robin Hood.

I have read with interest your excellent editorial on the jobber and also the half-fledged comments of H. C. He does well to admit in his opening paragraph that he does not possess "the insight that you big 'ginks' have into the national and money affairs."

Why should an aspiring journeyman use the word "gink" anyhow? It seems to me to be a letter prompted by one who has long passed the journeyman-stage and who is merely throwing in a few slang words for effect. It sounds more like the wail of a disgruntled plumber or steam-fitter.

It is difficult to understand H. C.'s misuse of English. For instance, "When this line of action got started, medium well, that the correct and proper jobber was all well." What line of action? Medium well, what? What does he mean by a correct and proper jobber? And how was he all well? Too much well, H. C. Your stock of language is too heavily watered.

He asks: "Why the jobber?" He might as well ask: Why the wholesale house? Why the retailer? Why the branch banks? Why the sub-post-offices? Why the Pyramids? Why the universe?

He quotes the case of his old boss doing a war-dance because he didn't get his entire order filled, as though that were an argument. It is evident that H. C. has never dealt direct with the manufacturer or he would know that the delay would be just as likely to occur through the manufacturer's inability to fill the order, supposing that as H. C. suggests, the plumber dealt direct with the manufacturer.

Of course, there are jobbers who don't job and who extend crazy credits. There are likewise plumbers who don't plumb and don't pay their bills. Common-sense will dictate to the level-headed man of business the inadvisability of dealing with the unreliable and undesirable jobber. It is up to the plumbers and their associations.

As to H. C.'s suggestions, the first is an undesirable dream. The other three have all been tried in individual cases with varying success for years before either H. C. or myself were born.

The root of the whole problem is personal honesty.

The honest jobber is of the greatest possible service to the trade. He acts for us as an engineer of selection, a convenient source of supply and consultation. **Let us as master plumbers and steam-fitters be true to our better selves and cease running after strange gods of fatherless goods at basement prices, and we will find the right kind of jobbers and manufacturers to supply our every need.**

Glen Carbon, Ill. Robin Hood.

We will be glad to have the further expressions of opinion on this subject from other readers and also from the jobbers and manufacturers themselves. The only way to bring about the salutary changes needed in the plumbing and steam-fitting trades is for all hands to get together and study each others' aims and motives. Let us hear from you.

The hammer of action can bring sparks from the iron of thought on the anvil of opportunity right now. Use the hammer but don't knock.

A PRACTICAL MANUAL OF STEAM & HOT-WATER HEATING

BY EDWARD RICHMOND PIERCE

In this section Mr. Pierce concludes his most interesting series of articles on steam and hot-water heating. In a short time we hope to present the entire series to the trade in book-form. So great has been the demand for back copies containing previous sections that we wish to advise our readers that they are impossible to obtain, many editions having been exhausted. The series in book-form will, however, satisfy your every need. The concluding section contains a historical treatment of radiator-evolution. Mr. Pierce will in the near future present other articles of equal value on heating topics.

SECTION XLV.

This leads us to the matter of radiators. The first radiators were crude indeed. Of course the first radiating surface was pipe coils of 1-in. pipe. Much of the confusion in the trade today in regard to radiator ratings has developed from lack of information in regard to the early history of the heating-business and of radiators in particular. The first recorded patent for a heating-radiator accompanied with a description that is now available, was granted to Anthony Hitchings in 1848. There was a patent granted 12 or 13 years before this to Robert Rogers of South Berwick, Me., but all trace of what form his system of steam-heating assumed was destroyed by the Patent Office fire of 1836.

The illustration, Fig. 29, of the original Gold boiler, as produced by H. B. Smith & Co., is very interesting, in that it shows that Gold's idea in the first place was not to use

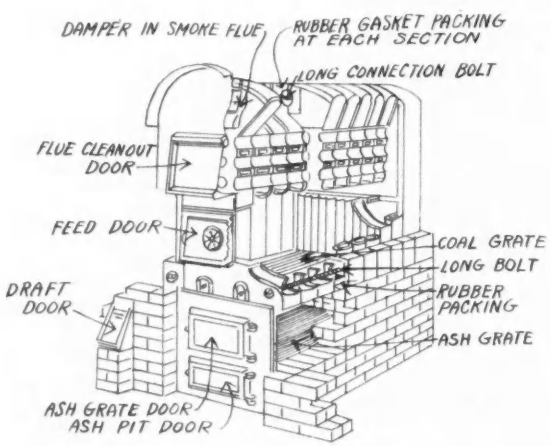


Fig. 29.

the header and return, or mud-drums, but to provide for an internal circulation.

It is probable that the troubles that come to the manufacturers because of the difficulties of maintaining tight joints with the rubber gaskets, when the boilers were used at the high pressures used in those days, led to the production of the header and return-drums in order that a screw-nipple construction might be employed and thus get rid of the troublesome rubber gasket.

This connection became practically universal; and as years of use accustomed the fitters to this header-connection, in time many of them came to think that there was something of special circulating merit in the device.

That, with the improved mechanical facilities of the present day, manufacturers should go back to the original Gold idea of an internal circulation without the use of the cumbersome outside connection, is a striking proof of the vitality and correctness of Samuel Gold's original idea as to the proper construction of a cast-iron heating-boiler.

Fig. 30 will be interesting as showing the first American patent for a system of hot-water heating. The chief feature of the outcome of Hitchings' patent seems to have been that it compelled fitters to use pipe for radiating the heat in steam and water-heating systems, or buy of Hitchings.

In order that the manner of rating radiators shall be clearly understood, it will be necessary to trace, very

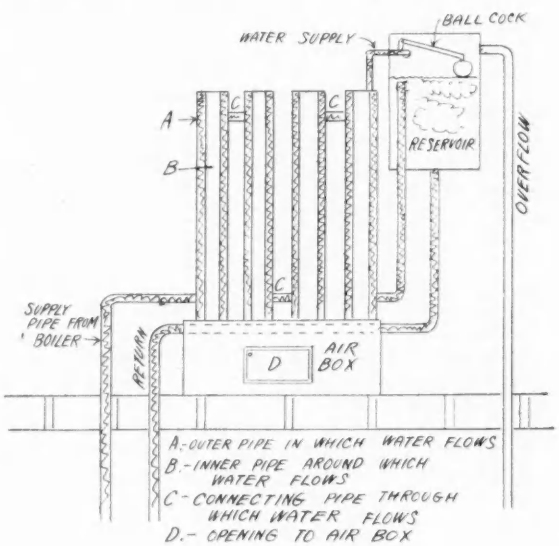


Fig. 30.

briefly, the evolution of pipe-coils into pipe-radiators and the rise of the cast-iron radiator as a competitor.

It would undoubtedly be interesting to many to have the whole history given, but to do that would be to write a book. I personally believe that such a book from a competent writer would be of great interest and value to the trade and the public.

The first radiating surface used was mostly of cast-iron pipe. A little later gun-barrels were used for this purpose to such an extent that the secretary of the United States treasury called attention to it in one of his reports to congress, in which he mentioned the beginning of a wrought-iron pipe industry in this country.

The first variation from a single pipe around the wall was what was called the "flat-coil." This was either pipe or gun-barrels from 30 to 48 in. long, screwed into return-bends. This was followed by what was known as "two-section coils," which were simply two "flat-coils" fastened up side by side with a "chuck-spacer" to fix the distance between them. Following this came what were known as "manifold-coils," the pipes being 3 or 4 pipes wide. The "box-coil" came into use for indirect work, taking its name because it was boxed close into its place in the cellar. There were several other designs of pipe-construction which were used in a horizontal position, and the name for which was as significant to the trade as the "box-coil," and about as unintelligible to the fitter of to-day; as, for instance, the difference between a "flat-coil" and a "wall-coil," although there was a marked difference.

The fitters of those days made many attempts between 1848 and 1862 to produce vertical radiators from pipe, but with slight success, and it was not until 1862 that the problem was solved.

In March, 1862, there was issued to Nason and Briggs a patent for a steam-radiator composed of vertical tubes screwed into a horizontal cast-iron base, the tubes having an inner-tube, or a diaphragm, which serves to prevent the steam from compressing the air and thus preventing the circulation of either the steam or the air. It is rather curious to find these two greatest of American steam-engineers adopting for the first successful vertical-pipe radiator the inner tube shown in the patent granted to Hitchings in 1848 for a hot-water radiator. It is also notable that while Hitchings' patent did not expire until 1865, or for three years, that Nason and Briggs considered Hitchings could use his radiator as a steam-radiator.

Within the few years immediately following 1862, the Walworth radiator and one or two other pipe-radiators received Patent Office protection because of some novelty in the manner of construction.

In this way, from 1862 to 1879, the vertical-pipe wrought-iron radiator business fell into the hands of concerns of great capital and great business ability. These were the men who had the inventive power and the business capacity to make the steam-heating development in this country in those 17 years one of the business marvels of the 19th century. After the close of the Civil War the heating-business began to attract the attention of the manufacturers of cast-iron.

Nason and Briggs, in putting their radiator on the market, arranged its surface in such a manner that each wrought-iron pipe and its proportionate part of the cast-iron base and top should present exactly one sq. ft. of surface to the air.

Their first patterns were for single-pipes only, and about 30 in. in height. The demand for less extended radiators, when quite large surfaces were required, led to the making of 2-section, and later to 3 and 4-section radiators. But each section was figured to present exactly one sq. ft. of surface. Do not overlook the supreme importance of this fact. It is the key that will unlock for us the methods adopted by the cast-iron men when they got into the radiator game.

The production of radiator surface in absolute units of one sq.ft. immediately led to the adoption of the following method in ordering radiators. Suppose a fitter wanted 24 sq. ft. of surface in each of four radiators, and sent in an order for four standard height steam radiators, one 1x24, one 2x12, one 3x8 and one 4x6. There would be shipped to him four radiators, each of which actually contained 24 sq. ft. of heating-surface, but he would very soon find out that the 1x24 would heat more air than the 2x12, and that would heat the same amount of air hotter than the 3x8, and that in turn more than the 4x6. In this respect there was no difference between the vertical pipes "bunched" and the "wall-coils" "bunched." The usual howl of "overrated" went up from those fitters who were so "practical" that they never needed to study, or even read the "fool stuff that the book men get out."

Mr. Nason gave out the results of a few tests made by him as follows: From single horizontal 1-in. pipe, 64 ft. in length, and filled with steam at 228 deg. temperature, the air in the room being at 70 deg., he found the pipe emitted 447 B. t. u. per sq. ft. per hour. His test on a 1x24 Nason and Briggs wrought-iron radiator showed that under the same conditions the value was 390 B. t. u. per sq. ft. per hour. Under the same conditions he found that a 2x24 Nason and Briggs radiator only emitted 309 B. t. u. per sq. ft. per hour, and a 3x16 emitted at the rate of 278 B. t. u. per sq. ft. per hour. Mr. Nason endeavored to make it clear to those who wished to know that there was a material difference in the heating-value of 24 sq. ft. of 1-in. pipe surface as a radiator of heat, caused by the position in which it was placed, horizontal or vertical, and, again, it made a more pronounced difference if the surface was massed in close parallel rows.

As the result of the discussion at that time, different wrought-iron radiator manufacturers produced radiators which they warranted to contain 1 sq. ft. to each pipe, but some there were who endeavored to furnish for each single section of pipe, cast-iron base and top, which constituted the radiator, enough additional surface beyond that in the Nason and Briggs wrought-iron radiator so that a 1x24 section, for instance should emit 447 B. t. u. per sq. ft. per hour under standard conditions as they then existed. This had the effect of making these radiators more than 30 in. high.

After the close of the war between the states, the possibilities of the heating-business began to impress itself on the foundrymen of the east. They very soon became a factor of importance in the boiler part of the trade, but in order to get the radiator business into their hands something would have to be originated that could compete with the wrought-iron radiators in efficiency, appearance, and durability.

The popular width in the wrought-iron radiator was the 2-column. The first cast-iron radiator to catch the popular fancy was the "Bundy" radiator. This was brought out in 1869 and was the invention of Nelson H. Bundy, of the firm of Bundy & Healy, of New York. With some minor changes from the original "Bundy" the radiators manufactured by the late A. A. Groffing Company of Jersey City, N. J., was the same as this first real competitor of the wrought-iron radiators. The original patterns of the "Bundy" are owned now, and have been for many years, by the Walker & Pratt Mfg. Co., of Boston, Mass.

In order to secure the same number of heat-units per sq. ft. of rated surface in a 2-col. cast-iron radiator that would be emitted from some larger unit in the 2-col. wrought-iron radiator, it was found that by making the cast-iron radiator a little higher, each section could be made to have the same value in B. t. u. emitted as a 2x2 wrought-iron standard radiator of the Nason and Briggs type.

This fixed the standard for 2-col. cast-iron radiators as 4 sq. ft. per section, and *height would vary according to width.* When in the course of time other foundrymen dipped into the making of radiators, they followed the precedent of the "Bundy" and professed to make their 2-col. radiators to emit the same number of heat-units per section as a 2x2 wrought-iron pipe-radiator of the

standard of the Nason and Briggs type, and as a result 2-col. cast-iron radiators, rated at 4 sq. ft. per section, ranged from 34 to 39 in. in height.

The growth of the radiator business among the foundrymen soon led them to produce 3 and 4-col. radiators. It is at this point that the confusion arises in the minds of those who are not conversant with the methods which the cast-iron men used in rating their goods. When the matter of rating the 3 and 4-col. cast-iron radiators came up, they were fashioned so that each section should emit a certain number of heat-units relative to the wrought-iron goods of a 3 or 4-col. That is, one section of the cast-iron radiator should equal a definite number of sections of "bunched" wrought-iron pipe sections. The 3-col. radiator proved to be a troublesome proposition. In order to get the efficiency of 6 Nason pipes in a casting of the same height that had been established for 2-col. cast-iron radiators of 4 sq. ft. to the section, a radiator of undue width presented itself. It was thought that the height had already been raised as much as the public would stand, and finally the matter was solved by taking a 3x5 wrought-iron radiator containing 15 sq. ft. as the standard from which to create the competing cast-iron sections. In this way it became possible to produce a 3-col. cast-iron radiator that would emit under the then standard conditions of steam in radiator at 228 deg., air in room at 70 deg., 4,170 B. t. u. for 15 ft. of the massed or bunched surface, this being the same that a 3x5, or 15 sq. ft. of 3-col. wrought-iron pipe radiator emitted under same condition, viz.: 278 B. t. u. per sq. ft. of surface at temperature difference of 158 deg.

Probably there has been more notice taken of the size of the cast-iron 4-col. radiator in connection with its rating of 8 sq. ft. than of any other pattern. To most of the trade this 8-ft. rating has seemed like highway robbery. But when measured against a 4-col. pipe mass, it is the one pattern of all the cast-iron goods that is the most conservatively rated.

The great trouble with the cast-iron radiator proposition is that the trade has been fooled into buying the goods by the square foot of alleged surface, instead of buying what they themselves are called upon to sell, British thermal units of heat. When the trade gets around to the point of vantage which enables them to buy radiators on the basis of the number of heat-units given off under the new standard conditions, imposed by the new rating placed upon boilers, instead of buying so many sq. ft. of cast-iron, trusting to luck and guessing that the job will come out all right, as they now do, they will require of the radiator manufacturer a garanteed statement of the heat-units that each pattern of radiator will emit when placed under the standard conditions that the manufacturers themselves have created. And why should radiators be sold upon any other basis? It is heat-units that you are obliged to furnish when you contract to heat a building. Why then should you purchase square feet of iron without the slightest intimation of a garantee as to its capacity for delivering the heat you have contracted to furnish with "not to exceed 2 lb. pressure at the boiler" for your steam job, or with the thermometer not above 180 deg. at the boiler in the hot-water job?

From those who have followed me from the time we commenced with the chimney to this last question, I believe that there will be but one reply.

When the steam-fitters, the hot-water fitters, the architects and the engineers on whom the burden of selection and garantee has been thrown by the manufacturers, call for heat-unit values from the manufacturers as the only standard upon which business will be done, scientific heating will have commenced.

To give the common-school fitters of the country an idea of the fundamental principles of the science that they are practicing in their daily work, has been my aim, rather than to present a series of hard and fast rules, which, from the very nature of the heating-problem, could only serve to confuse those who had some insight into heating-problems as stated by others.

To furnish plain, even if at times long, explanations for each of the more important items which enter into the design and erection of a steam or hot-water heating-apparatus, to the end that any intelligent workman may, by the aid of the tables and explanations, be able to reconcile most, if not all, of the differences that the publishing of numbers of individual rules has created, has seemed to me to be the helpful thing to bring to the American architects and workmen in the steam and hot-water heating lines.

When these workmen have once grasped the fundamental facts which govern the heating-problems, it will not be necessary to furnish cut and dried rules for them. They have the capacity to work out, each for himself, a better working-plan for each individual contract than can be furnished ready-made.

To the man who desires to be reasonably well prepared to construct intelligently either steam or hot-water house-heating jobs, it is believed the plain reasons for each step which have been detailed in the discussion here ending will prove of value. But sound common-sense, applied to each job as it comes, is as much needed as the knowledge of rules. King David instructed Solomon, whom we are told became the wisest of men, as follows:

"Get wisdom, get understanding. Forget it not. Wisdom is the principal thing; therefore get wisdom, **but with all thy wisdom get understanding."** The advice is said to have worked out well when accepted by Solomon. Think it over.

(The End.)

GOVERNMENT CONTRACTS TO BE AWARDED.

Supervising Architect James Knox Taylor, Treasury Department, Washington, D. C., will receive sealed proposals as follows:

Until 3 p. m., Aug. 16, 1911, for the installation of a vacuum cleaning system for the new United States post-office at New York, N. Y.

Until 3 p. m., Aug. 16, 1911, for the construction, including plumbing, gas-piping, heating apparatus, electric conduits and wiring, and lighting fixtures, of the U. S. post-office at Massillon, O.

Until 3 p. m., Aug. 17, 1911, for the construction, complete, including plumbing, gas-piping, heating apparatus, electric conduits and wiring, and lighting fixtures, of the U. S. post-office at Mineral Wells, Tex.

Until 3 p. m., Aug. 21, 1911, for the installation of a vacuum-cleaning system in the U. S. court-house, post-office, etc., at Los Angeles, Cal.

Until 3 p. m., Aug. 29, 1911, for the construction, including plumbing, gas-piping, heating apparatus, electric conduits and wiring, and lighting fixtures, of the U. S. post-office at Wallingford, Conn.

Until 3 p. m., Aug. 29, 1911, for the construction complete, including plumbing, gas piping, heating apparatus, electric conduits and wiring and interior lighting fixtures of the United States post office at Monroe, Mich.

All proposals should be in accordance with drawings and specifications, copies of which may be obtained from the custodians of the above sites on or from the office of the Supervising Architect at Washington, D. C.

THE JOURNEYMAN AND HIS HELPER

JOIN HANDS FOR BETTER WORK

WHAT'S IN A DAY'S WORK?

Editor "Domestic Engineering":—I have observed an article in your paper by "Josiah Crabtree" on the subject used as the heading of this article. He seems to think that man's chief end in life is to make a chain lightning expert out of himself and, at the same time, to be able to carry four times the burden with less than half the effort. In other words, he is a first-class imitation of one Pharaoh, who, some 4,000 years ago, commanded his workmen to rustle around and make the brick without straw; only this 20th century "gink" would want the brick thrown out in half the time and twice as many of them.

What's in a day's work anyway for the average man? The reply is, a day's wages. Now, in 99 out of every 100 cases, no matter how hard the man works, nor what points he establishes in bettering the work, unless he is shrewd enough (and is able, by law) to take out a patent on his improvement, he gets few thanks, no appreciation and no money. The chances are that his invention may be stolen, and it is a dead sure thing that he will get it in the neck most every time from the workmen, as he has made the number of jobs less and so thrown several out of much needed employment.

I do not believe in "soldiering." It is a mistaken policy to strive to "make the job hold out," but I simply refuse to make a cart-horse out of myself and throw out from two to ten times as much work per day, for perhaps a small percentage of increased wages. Even at the present rate of wages, if the man doubles his output, his wages should be doubled also. The question is: If it were possible for him so to do, would he get the salary doubled? If so, what are you going to do with the mechanic (or mechanics) that are thrown out of employment? Feed them .. the expense of the man who gets the increase? If so, where is he ahead? Put the jobless men on farms? Who will pay their transportation and that also of their families? It seems to me that this world has wagged on its way for several thousand years, and that the millions that have been born and passed through life have fared as well as they deserved, in most cases. If a man deserves to rise in life out of the class that he occupies, he is always sure to find some means of doing so. This has been shown in the cases of thousands all along the paths of history.

The rest of us are plodders and will remain so. We turn out enough to keep the mills going and have done so in every generation. Too much, in fact, sometimes, as is proved when the country occasionally becomes overstocked and a shut-down becomes absolutely necessary.

Now here comes along a man that proposes to turn out several times as much work with less than half the workers. I'd like to ask, What are the rest of us going to do?

Perhaps Mr. Crabtree will kindly answer this for our benefit? H. C.

THE ROOSTER AND THE PLUMBER.

Editor "Domestic Engineering":—Some little time ago I was walking down one of the crowded streets of the city in which I live when suddenly, loud and clear, there rang out the crow of a rooster. It struck several of the crowd so queerly that they stopped, looked around to see where it came from and then passed on. I can't tell why I did it, but I traced the crowing down and located the rooster in a crate of chickens in front of a meat-market. "Too bad," though I to myself, "to let a live one like that decorate the table of some unappreciative cuss," so I bought the rooster and took him home and kept him alive. Happily I live on the outskirts, so no one objected to his crowing. Do you know that that fellow was advertising himself all the time? He started me to thinking that I was not pushing my own trade and advantages strong enough and so I started in with some extra effort. Got after a boss that had been hanging fire for some time and sung my tune like a live one. Stuck to it, too, and finally landed him, and a good job. Nor was that the only one, for the rooster kept on with his daily music, keeping me stirred up constantly.

Now you can see that sometimes a little point will turn the tide in a man's affairs. That rooster taught me a lesson, and it was not to be afraid to sing my own tune at any old place and any time and to keep at it.

Sell that rooster? Not me. He's too valuable a reminder, too much a live one to be parted with. Wouldn't take $10 for him. You can get a most valuable lesson from little things any day, if you only have the eyes to see and the sense to make the application.

Poultry.

HAVE YOU GOT A GRUB STAKE?

Editor "Domestic Engineering":—I see that you have some mighty good thoughts in your paper, something different from the general run of trade papers, and thought that I would write in a little experience of my own that perhaps, would start some of the boys to thinking and and do some good.

A couple of years ago, I got out of a job, and it was a long time before I could land anything. Didn't have much saved up and it soon went. Well, we most all know how such things go. Friends are good, but there is a limit even to friendship. I made up my mind at that time, that if I ever did get to work once more, I would try and get ahead. So when I copped out a job, at last, I got me a tin box and cut a small slot in it and soldered the lid down. I made it a point to put a little change into this box every night.

About six weeks ago, I got a lay-off for a month and I thought it would be a good time to look at the contents of the box, so I opened it up. Can you guess how much money there was in it? Well, I'll just tell you in order to save time. There was $142.68.

A pretty good sum to tide over the lay-off, was it not?

Of course I could have saved more than this, but the sum mentioned merely represents the loose change that would have been fooled away for one thing or another and when one comes to think of the way some of us journeymen scatter the money, it is small wonder that we do not get ahead more than we do. I am in hopes that this will come to the notice of several and start them to putting a little money aside for themselves, for there will come a time when they will need it.

"Grub Stake."

ANOTHER BATCH OF ?????'s.

Here are some questions to which we hope our readers will send their answers. We shall be glad to have the benefit of your experience, and we trust we shall receive many replies.

1. Do you remember the days when you were first attempting to wipe a joint? How long was it before you succeeded?

2. What was the most difficult part of the operation for you? How did you overcome it?

3. Just how would you instruct a beginner in the art?

4. How would you instruct him to make the proper allowance for the radiator to stand away from the wall, when roughing-in for it in a building not yet lathed and plastered? Most fitters ought to know that point, but you go to some job after the plastering is done and attempt to make the radiators fit the place the fitter has left. Then you'll know.

5. In "stubbing-up", how do you get at the amount to allow for the valve?

YOUR STOCK IN TRADE.

Suppose that you were to sit down this very minute and figure up just how much you are worth.

There'd be a sum for tools, for clothes, various other incidentals, perhaps a house and lot, perhaps not, maybe some cash. What does it foot up? Where are you at? Got anything else of value? Think a moment, there is your trade. How well do you know it? Have you got just merely enough to skin through on and hold down the job when the work is pressing? Do you know any of the finishing touches, such as estimating the amount of radiation, for instance? What have you to retail in yourself that the boss may want and what will he figure it at?

"Bill" or "Pete" may be getting more per week than you. Why is this? Have they a pull, can they do more work or can they do it better?

Is the knowledge in your head arranged in an orderly manner so that you can explain when necessary? There's lots of fellows that know certain points well; they can work, but not talk.

If you have never considered any of these points, it is time that you woke up and got into line. Find out just how much you are worth, and see that you get what is coming to you.

AMERICAN BATH FIXTURES IN SYRIA.

United States Consul-General W. Stanley Hollis, Beirut, Syria, reports that the building activity in that city has greatly increased within the last year. Many fine private houses and apartment buildings are in course of construction, most of which it is proposed to supply with modern bath-rooms. Baths are also being put in some of the old houses. As this movement is of recent date, the market is as yet an open one, and if taken advantage of may prove of profit to American manufacturers. A few American baths have been imported, but their price is excessive as compared with the English article so far imported. The average price of an English enameled porcelain-bath, 5 ft. 6 in., delivered in Beirut, duty of 11 per cent ad valorem paid, is $17. The freight and expenses included amount to about $1.95. There is also a rising demand for gas water-heaters, bath fixtures and complete outfits. A few baths and outfits of the finer grades can be placed.

PROFESSOR ALLEN SAILS FOR CONSTANTINOPLE.

Prof. John R. Allen, of the Department of Mechanical Engineering, University of Michigan, Ann Arbor, Mich., sails for Constantinople on July 29th to complete his work at Roberts College. Mr. Allen, fortunately, was able to attend the summer meeting of the American Society of Heating and Ventilating Engineers at Chicago, and contributed much to the profitable discussion of the various matters that were presented. We may expect to hear from Prof. Allen during his stay concerning the interest which the advanced Turks are taking in modern heating and ventilating matters.

ANNUAL SHORE DINNER OF THE MASTER PLUMBERS OF BOSTON AND VICINITY.

This year the annual shore dinner of the master plumbers of Boston and vicinity will be at the Bass Point House, Bass Point, Nahant, on Wednesday, August 16th. The committee in charge, of which Vice-President Sullivan is chairman, is making arrangements for the comfort and pelasure of all members and guests. Boats will leave Otis Wharf, at 9:30 a. m., 11 a. m. and 12:30 p. m.

ANNUAL OUTING OF THE PATERSON, N. J., MASTER PLUMBERS.

On Saturday, August 5th, the Master Plumbers' Association of Paterson, N. J., will hold its tenth annual outing. This year the heating engineers unite with the master plumbers in a trip to Coney Island. The Committee on Arrangements consists of Geo. S. O'Neil, chairman; J. H. White, secretary; John Baker, Robt. E. Quinn, Jas. J. Maher, Robt. Beaumont and Frank Vreeland.

WAS IT WATER ON THE BRAIN?

A good story has been told on Professor Jacobus, who is an acknowledged authority upon the flow of liquids through pipes, and upon the loss of hydraulic head due to elbows, valves, orifices and the like. The joke is mellow with age, but it seems good enough to resuscitate. So here it is, with our apologies to the professor.

Imagine yourself, if you please, at a minstrel show.

"Dat Professor Jacobus is a nice man," says Tambo, the end-man.

"Yes," says the interlocutor, "I think Professor Jacobus is a very nice man."

"Now me and him was talking dis afternoon," continues Tambo, "down in the bar-room; and—"

"What's that?" cries the horrified interlocutor. "You were talking to Professor Jacobus down in the bar-room?"

"Yassir, an' he says—"

"But you are surely mistaken. Professor Jacobus is a very serious minded and sober man. He could not possibly have been down in the bar-room."

"No, I ain't mistaken. He was thar all right, but he had a good right to be thar."

"He had a right to be there, did he? Well, what was Professor Jacobus doing in the bar-room?"

"He was collecting data on the loss of head due to the flow of a liquid through an orifice."

The Range Boiler and Connections

Uses, Abuses and Modifications

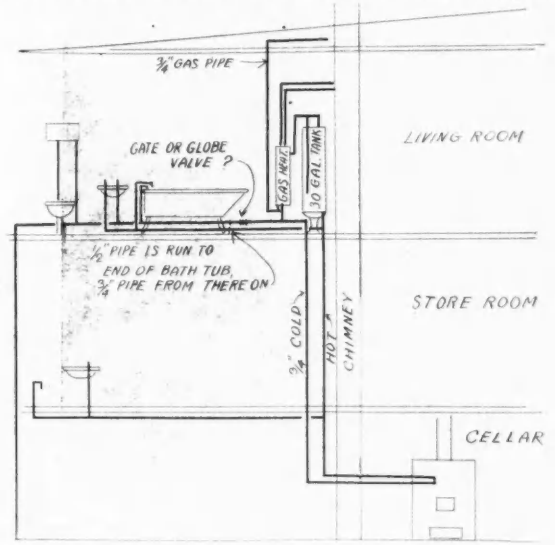
By Phoenix.

Chapter VII.

As this series of articles progresses, attention will be called, occasionally, to problems and solutions that have come to the "Questions and Answers" department of "Domestic Engineering." At this point, just before we begin the consideration of the manner in which the pipes are run from the range-boiler to the different fixtures and some of the mistakes which then happen and the better methods of such installations, it might be instructive to present a few of these sketches and their various problems.

On page 72, January 21, 1911, there appeared an inquiry from "3649," giving a sketch showing a range-boiler installed in a bath-room and at that point heated from a gas-heater. The job was also connected to a coil which was placed in a furnace located in the basement. The writer asked for any changes or suggestions deemed advisable. This question was answered by a subscriber from Dayton, O., who submitted a sketch which was published March 4th, and is reproduced here for comment.

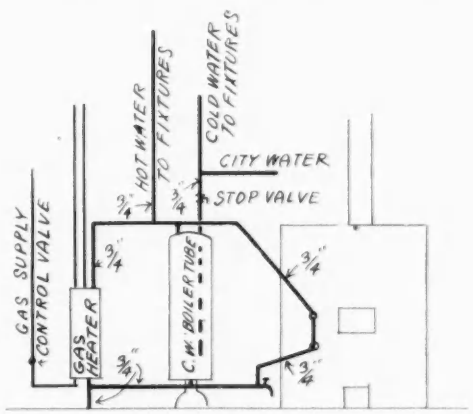
The original sketch of "3649" is somewhat mixed and I cannot see how the job would work, if installed as he has drawn it. The man from Ohio ends with telling us



The Installation Under Consideration.

that a job done according to his sketch will work all right, "except that the coil in the furnace will not be very efficient." Now I submit that the coil in the furnace will be heated about seven months in the year (in this climate) to about five required from the gas-heater and that, such being the case, the job should be so arranged that there would be no doubt whatever as to the proper heating of the coil.

Moreover, if the coil in the furnace and the range-boiler be rightly set, it will be most efficient and should furnish almost unlimited quantities of hot water whenever there is a fire in the furnace. Installed as shown, it would not be very difficult to ascertain at least one source of the difficulty and the poor performance of the coil. The range-boiler is set too low with respect to the position of the coil. In the basement there is almost no



How J. W. Would Arrange the Piping.

reason to prevent the range-boilers being hung horizontally from the ceiling and in such an event, it would be anywhere from three to six feet above the coil in the furnace and it would take a very ignorant plumber so to connect it that it could not work when so placed. In so hanging the boiler, one would be sure of about all the hot water desired for the longer period of the year, and it would not be necessary to make use of the gas-heater to help out.

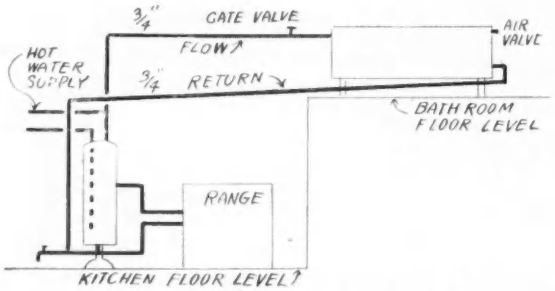
This job, as was shown in the drawing, also possesses another feature that is not desirable, and that is the length of the cold water tube. As shown, it extends far below the level of the coil in the furnace and if the vent near the top of the cold water tube ever got stopped up and the job should siphon, the coil would stand a chance of being drained, if put in without proper safety appliances, such as vacuum valves.

The tank that "3649" wished to install was supposed to be 30-gal. in size, and any one who has had much experience well knows that this should be a "cinch" for an ordinary-sized coil in the fire-pot of a furnace or steam-boiler.

In the same issue of "Domestic Engineering" there appeared an inquiry from "H. H. G," relative to the installation of a range-boiler in a bath-room for the sake of warming same. He also desired to know what distance the range-boiler could be placed from the coil or water-front and be sure of its working.

To this we replied that a range-boiler in a bath-room presented a most unlovely appearance and that if it were

possible to heat the room in any other manner, if for nothing more than the sake of looks, it should be done. We also stated that we had observed the range-boiler located as far as 100 ft. distant from the coil in the furnace, and knew that the job had given perfect satisfac-



Bath-Room Heated from Kitchen-Range Boiler.

tion. In a later issue (Feb. 18th.) on page 175, there appeared an answer to this question in which "M. A. W." kindly gave a sketch showing just how the job should be installed according to his idea.

According to the experience that I have had with radiators, this one, if hooked up as shown, would not heat any too well, as the return is taken from the opposite side from which the supply is admitted, the supply at the top and the return at the bottom. Most of the radiators that I connected in this manner failed to heat in all the loops. The mere changing of the position of the return to the same side of the radiator that admitted the supply, thus making what is called a "top and bottom" connection, at once remedied the matter and the radiator would then heat to perfection. Two gate-valves (one on supply, the other on return) should be used in case the radiator ever had to be removed for any reason.

Another point in this drawing strikes me somewhat unfavorably, and that is the manner in which the pipe to the radiator and the pipe to the fixtures are connected at the "tee" just above the top of the range-boiler. It would seem that, as connected, the radiator would be favored at the expense of the range-boiler and if an unusual quantity of hot water were suddenly required, it would not be forthcoming. The radiator should be supplied from the side of the tee, just as we would supply to a radiator located in the second story, when we took off also from the same riser to a radiator on the first story, according to my experience.

GRABER BROS., SALEM, ORE.

Oregon is not one mile further from Illinois than Illinois is from Oregon, and yet the eastern plumbers talk of Oregon as being in the Far West and therefore inaccessible. To show that Oregon is all there we are bringing a piece of it near to you by the accompanying photograph of the show-room of Graber Bros., plumbers and gas-fitters, 141 South Liberty St., Salem, Ore. The brothers are Joseph Graber and John Graber. They learned the plumbing trade in Salem; they studied what the Salem folks wanted; they decided what the homes of Salem should be provided with in the way of sanitary installa-

Attractive Show-Room Display of Graber Bros., Salem, Ore.

tion. Then, two and a half years ago they went into business for themselves and made good. Graber Bros. employ 12 men most of the time. Last year they installed plumbing and gas-fitting in over 250 houses, and they report that this year promises fully as well. They are in the enviable position of having more work in sight than they can handle. In a recent letter they state that they have one chief desire and that is to install the best sanitary plumbing apparatus they can get. When we go out west to that big fair at San Francisco, some of us may find time to stop at Salem and saw "howdy" to the Salem boys.

Kitchens and Laundries

Their Plumbing Arrangement Equipment and Sanitation

By Wm. Paul Gerhard, C. E.

Written expressly for "Domestic Engineering." All rights reserved.

CHAPTER IX.
LAUNDRY OPERATIONS.

Having studied the plans and views of some modern European hospital laundries, we shall next take up the various laundry operations. We shall then be in a position to formulate the principal requirements of a hospital laundry.

"Washing" may be defined as the art of restoring soiled linen, cotton, or woolen fabrics to their original cleanliness, generally by the use of water, soap and frictional rubbing. It signifies the cleansing of cloths in water in such a way that damage is not done to the articles. Usually it is accomplished with the aid of some detersive substance, that is, one which has the property of loosening the dirt. Washing is, therefore, an important sanitary measure in the interest of cleanliness.

The term "launder" has a wider meaning, as it includes not only the washing, but also the drying, bleaching, starching, pressing and ironing of cloths or linen.

The removal of dirt from the underclothing is required in the interest of personal hygiene, for soiled body- and bed-linen, after having absorbed the perspiration and excretions from the skin, and being more or less filled with such waste products of the body, are unwholesome to wear or use and may become a source of danger to the wearer or user.

Clothes are washed periodically in order to remove this dirt, to restore the pores of the fabrics to an open condition, and to kill or destroy any bacteria present in them. Abundant use is made in washing operations of nature's three great purifiers, water, air and sunshine. Laundry methods differ in details according to whether the fabrics are vegetable, like cotton or linen, or animal, like wool and silk.

In washing cloths we remove by means of friction, aided by soapsuds, water and detergents like ammonia, borax, turpentine, kerosene or other means, the dirt previously loosened by soaking in water.

The different laundry operations, placed at least approximately in the order in which they follow each other, are as follows:

I. Preparatory Work: 1, receiving the soiled linen; 2, assorting and marking (chiefly in commercial establishments); 3, disinfecting that part of the wash which is infected (chiefly in hospitals and institutions); 4, soaking the wash; 5, removing bad stains and mending bad rents.

II. Washing Proper: 6, washing and boiling; a, hand-washing; b, machine washing; 7, rinsing; 8, wringing; 9, drying.

III. Finishing Work: 10, blueing, starching, bleaching; 11, mangling and ironing; 12, fluting; 13, folding and pressing; 14, mending and repairing; 15, storing or delivering.

The entire wash is not necessarily subjected to all the operations named. Some articles, for instance, are only blued, while others are blued and starched; parts of the wash, as those which are not starched, are only mangled, whereas others, and always the starched goods, are ironed.

The assorting of the wash is an important preliminary operation, for the different fabrics may require different treatment. Colored clothes and flannels are always laid aside separately. Sometimes the wash is divided into table-linen, bed-linen, towels, handkerchiefs, kitchen-towels and finer clothes. Marking is essential in commercial-laundries, but even in hospital-laundries marking is sometimes practiced.

Soaking is one of the indispensable preliminaries to successful washing. The cloths are kept over night in vats or tubs, the object being to loosen the dirt and to separate the fibres.

The removal of stains requires special treatment according to the nature of the stains. I shall not go into a discussion of it, beyond stating that it is usual to use substances in which the particular stain is soluble. Badly stained cloths should be cleaned before washing, for the boiling of the wash may render a stain permanent and unremovable.

It is advisable to repair large rents in cloths before submitting them to the washing process. The ordinary mending is performed after the laundering is completed.

Boiling of cloths is done to destroy the germs, but very dirty linen should be soaked and washed first, for boiling may otherwise become disastrous to the wash.

Washing is to a large extent a mechanical removal of the dirt. After washing, it is important to rinse the cloths thoroughly in clean water to remove any remnants of soapsuds or alkalis, which if left in the cloths might become detrimental to the starching or blueing processes. It is done either in the tubs, the washing-machines or in special rinsing-machines.

Wringing means extracting a part of the moisture after washing, and is either done with a contrivance having adjustable rollers for pressing the water out, or else accomplished in machines by centrifugal action.

Drying removes the balance of the moisture. If done in the open air, it also airs the cloths, and accomplishes some purification by the sunshine, which bleaches and sweetens the wash. Chemical bleaches should by all means be avoided; unfortunately, much use is made of chemical bleaches in commercial-laundries, generally to the detriment of the wash. Artificial drying is accomplished in special cloths-drying machines; the wooden or metal horses, on which the wash is hung and placed before an open fire to dry quickly, are an undesirable makeshift device. Many fires owe their origin to the use of such artificial drying methods in laundries.

Blueing the wash is done to disguise its yellow color. When cloths are imperfectly washed, or rinsed insufficiently, or not subjected to the bleaching in the sunlight, they acquire in time a yellowish tinge. The object of blueing is to keep the linen white, and either Prussian blue, or, preferably, indigo or ultramarine is used for the purpose.

A part of the wash is starched, as for instance the collars, cuffs and bosom shirts. By starching the garment-mentioned acquire a glossy surface and keep clean longer; they become stiffer and last longer in use and are more moisture-resisting. Corn starch, wax and paraffine are used in starching.

Ironing is the process of pressing or smoothing the

linen by means of heated flat-irons. When the pressing is done either between or under rollers which may be heated, the process is called mangling. Ironing is done with gas-irons, electric-irons, irons heated over gas or coal fires, or sometimes irons heated with denatured alcohol. The irons used are of several sizes and weights. They should be kept free from rust and smooth on the working side, and are sometimes rubbed with wax. The ironing board or table should be covered with woolen blanket and linen sheet on top of it, and these should be kept clean and smooth.

EASTERN TRADE GOLF ASSOCIATION MEETS AT DUNWOODIE, N. Y.

J. B. Garfield, as captain of the Eastern Trade Golf Association, reports a most enjoyable gathering at the regular summer tournament held at the links of the Dunwoodie Country Club, Dunwoodie, N. Y., Thursday, July 20th.

In the morning in the regular 18-hole medal-play handicap, Stephen Roberts was the winner, with a net score of 76, and received first prize; G. H. Bell, with a net score of 77, won the second prize; R. B. Hunt, with a net score of 84, won the third prize.

In the afternoon C. C. Hale and F. J. Oliver, with a net score of 71, won the best-ball foursome contest. C. C. Hale and F. J. Oliver were also winners in the morning competition, but as they took the foursome prize they were ineligible to take the prize of the morning contest.

The record of the players was as follows:

MORNING ROUND.

Name.	Out.	In.	Total.	Hdp.	Net.
S. Roberts	43	39	82	6	76
G. H. Bell	46	45	91	14	77
F. J. Oliver	48	44	92	15	77
C. C. Hale	52	46	98	16	82
R. B. Hunt	54	50	104	20	84
E. C. Molby	50	47	97	12	85
E. E. Gano	55	46	101	15	86
W. C. Matlack	60	55	115	28	87
J. B. Garfield	43	45	88	0	88
W. H. Burnett	47	52	99	10	89
A. S. Armagnac	47	54	101	12	89
C. S. Prizer	47	54	101	12	89
G. M. Scott	59	60	119	30	89
C. N. Brizse	55	50	105	15	90
F. F. Cooper	52	61	113	20	93
W. C. LeCompte	67	66	133	35	98
C. S. Wood	68	68	136	25	111

AFTERNOON ROUND.

Best-Ball Foursome.

Names.	Out.	In.	Total.	Hdp.	Net.
C. C. Hale & F. J. Oliver.	42	41	83	12	71
W. G. LeCompte & G. M. Scott	49	52	101	30	71
E. C. Molby & R. B. Hunt	41	44	85	12	73
G. H. Bell & W. C. Matlack	46	44	90	14	76
C. S. Prizer & E. E. Gano.	44	45	89	12	77
W. H. Burnett & C. S. Brizer	45	44	89	10	79
J. B. Garfield & C. N. Brizse	42	39	81	0	81
C. S.Wood & F. F. Cooper	51	50	101	20	81
S. Roberts & A. S. Armagnac	41	44	85	2	83

A business firm in Italy informs an American consular officer that it would like to get in touch with firms in the United States producing gas water heaters, with a view to securing the representation of such houses in that country. Address File No. 6792, Bureau of Manufactures, Washington, D. C.

ANNUAL OUTING OF MAINE MASTER PLUMBERS

Although there was a dismal drizzle falling the greater part of the day on July 18th it had little dampening effect upon the spirits of the Maine master plumbers, who on that day held their annual outing at Long Island, Portland Harbor. About 90 members of the state association attended the outing.

The trip to the island was made by way of the steamer "Merryconeag" and on the arrival the first event was a baseball game between the traveling men and the plumbers. The game only went four innings and ended with the plumbers having an 11 to 8 lead.

Following the ball game came a tug of war between the same two factions, and in this event the traveling men squared themselves by a decisive victory.

Archie Campbell, a popular traveling man, won the sack race and in consequence carried away a handsome umbrella. There was a big field of starters in the three-legged race, but Morton and Stewart were easy winners, as was Arthur Duffy in the 100-yard race.

Several other athletic events were participated in and then the party adjourned to the dining-hall, where still more remarkable stunts than those performed on the green took place.

The committee in charge of the arrangements for the outing was composed of F. A. Davis, chairman, J. A. Mahoney and William J. Miller. Among the plumbers present, many of whom brought their ladies, were:

C. W. Goss, Lewistown; Charles A. Maynard, Portland; Frederick A. Maynard, Portland; George B. Ridley, Brunswick; F. E. Wheeler, Portland; J. M. Griffith, Boston; H. F. Gordon, Portland; J. E. Herrick, Boston; T. W. Kerrigan, R. A. Godfrey, C. E. Morrill, Boston; J. F. Kelley, Gardiner; S. D. Soule, Gardiner; P. A. Mahoney Portland; O. W. Wickstrom, South Bristol; A. M. Wheeler, Gardiner; Luther D. Searles, Boston; H. A. Young, Auburn; Fred A. Hotte, Biddeford; J. H. Cogan, Augusta; Edwin S. Bent, Boston; Arthur D. Brackett, Boston; R. C. Parker, Portland; Albert M. Parker, Albert D. Parker, D. J. Deyear, Arthur W. Savage, Boston; W. H. Edwards, Augusta.

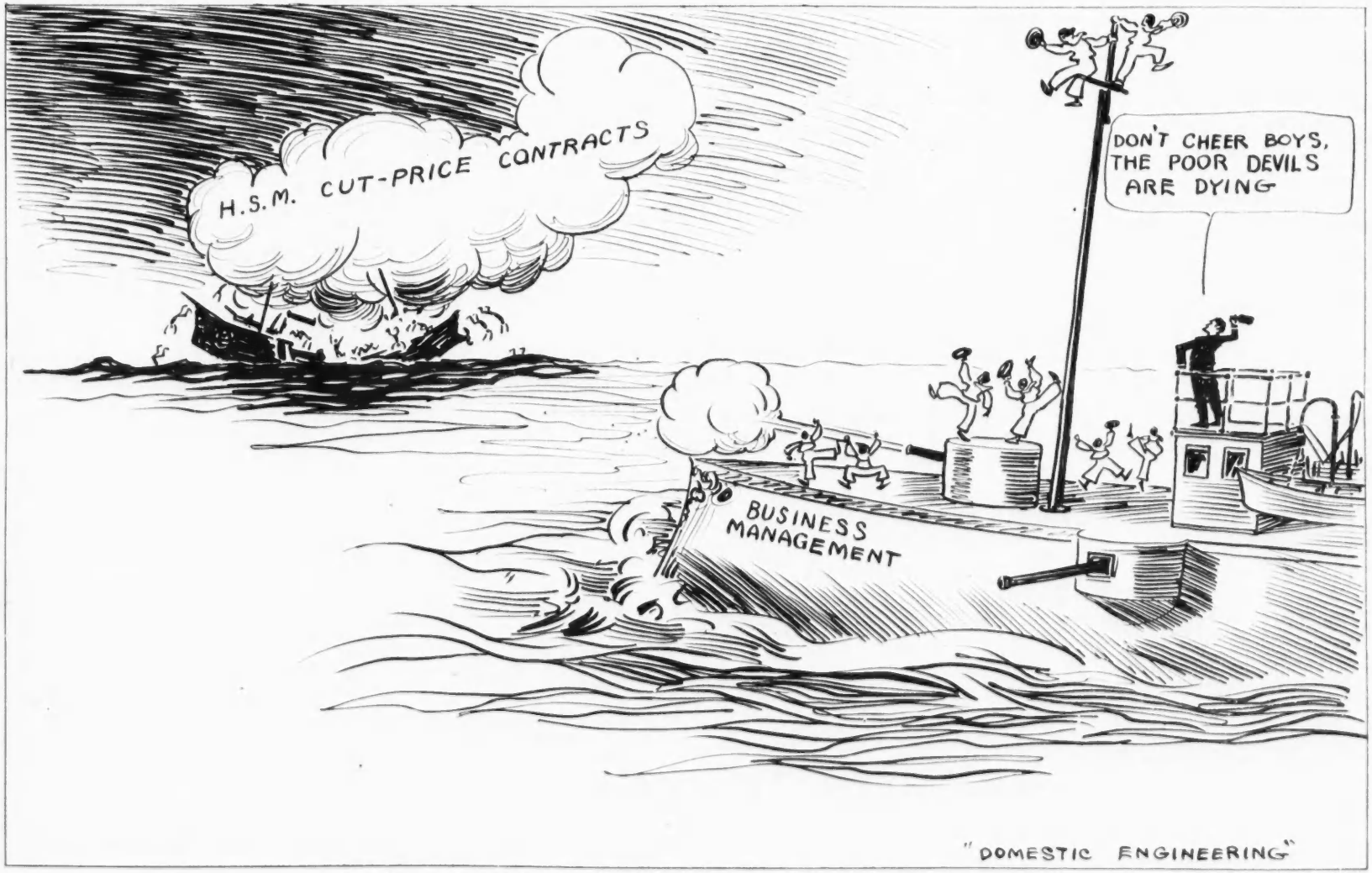
C. O. Morton, inspector of plumbing, Portland; R. W. Hanson, Waterville; L. P. Carter, Bar Harbor; John Fardy, Waterville; A. E. Campbell, Boston; Percy E. Norwood, Saco; C. E. Leavitt, Waterville; C. R. Nelson, Portland; A. M. Rosebrook, Boston; P. B. McGinty, Cleveland, O.; M. C. Tarr, Lewiston; Harry E. Lunge, Kennebunk; E. E. Adams, Portland; Charles C. Baldwin, Barton, Vt.; William A. Hugo, Boston; M. H. Myers, Portland; C. F. Dolliver, Lewiston; Blaine Harmon, Portland; F. H. Stuart, George W. Paul, Fred H. Rounds, Willie Hartley, George M. Toppan, W. J. Miller, Portland; Will C. Miller, Augusta; W. E. Curtis, Boston; D. A. Calhoun, Portland; John B. Smith, Lewiston; J. L. Murphy, New York City; M. J. Hirschfield, Boston.

THE N. Y. STATE COMPENSATION LAW.

Senator Saxe's amendment to the constitution, which is intended to make effective legislation which will compel employers to compensate workmen who are injured in dangerous occupations, has passed the senate of New York state by a vote of 46 to 3. A law recommended by the employers' liability commission and which sought to compel such compensation was passed last year; but a few months ago the court of appeals decided that the law was unconstitutional because it deprived persons of property without due process of law. The Saxe amendment would change the constitution so that it will recognize the state's right to pass a compulsory compensation law.

If you are on a committee, don't depend on the chairman. Do something yourself. If you are not on a committee ask the chairman how you can help.

"Domestic Engineering" Cartoon on "Cut Price Disablement"—No. XLVI.



His Satanic Majesty's Gun-Boat "Cut-Price Contracts" sunk by "Business Management"
Which Boat Did You Say You Were On?

If you want to possess a special proof of this or any other of our cartoons, let us have your request at once. We have many applications for our cartoons for framing and want to take good care of all demands made.

QUESTIONS AND ANSWERS

We are always glad to receive questions from our subscribers. There are hundreds of good fellows in the craft who can and will answer them. You are one of the good fellows, we feel sure. Send in your opinions once in a while.

AN EMERGENCY JOINT.

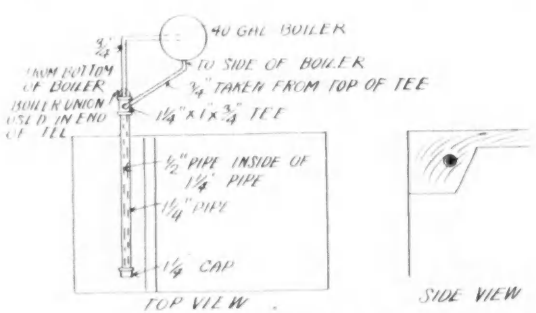
Editor "Domestic Engineering":—In case that there should be a short split in a water-pipe or bad leak around a fitting, what would be a quick and easy means of fixing it temporarily? B. J.

If you can get hold of a wad of putty about the size of your fist and work it until it is moderately pliable, you will have the first article necessary. The others are a piece of cloth that is quite strong and some twine that will hold well. Swipe the putty around the pipe so that it is covered at least an inch thick and then wind the cloth over the putty carefully. When you wind the string around the plaster, begin at the edges and make them secure first, winding inward as tightly as may be desired. Wound in this manner, the putty will not be forced out at the edges of the joint, which should hold for a spell until permanent repairs can be made.

A BIT OF HELP FROM OREGON.

Editor "Domestic Engineering":—I notice you have been devoting some space in several issues to coils in old-fashioned stoves.

Enclosed find sketch of one I installed about two years ago, which has given good satisfaction and does not take up much room in the fire-box. It is connected to a 40-gal. range-boiler, and consists of a 1¼-in. pipe, run in over the fire and capped on the end inside of the fire-box with a tee, 1¼x1x¾ in. on the outside and a ¾-in. pipe



An Interesting Installation.

taken off the top of the tee, and connected to side of boiler. The cold water is taken from the bottom of the boiler and carried up to the end of the tee where there is a boiler-union screwed into the 1-in. opening with a ½-in. pipe running inside of the 1¼-in. pipe to within about 2 in. of the end, where the cold water is discharged, and is heated as it comes back in between the 1¼-in. and ½-in. pipe. The above may be of help to some one in the craft, as I have not noticed anything in any of the journals just like this.

Ontario, Ore. L. G. O.

WHAT IS AN OFFSET VALVE?

Editor "Domestic Engineering":—Will you explain what an offset-valve is and the purposes for which it is used? Apprentice.

In fitting up a job of heating there are sometimes places where it is inconvenient to connect the radiator after the usual manner with an ordinary angle-valve. Hence is used what is called an "offset-valve." The inlet and the outlet to this valve are generally not on the same level and the valves are made either right or left hand to suit the place where they are intended to be used. The inlet and outlet are on different sides of the valve at an angle of 90 deg., the supply to the valve being taken at the side, rather than at the bottom, as is done with the regular angle-valve.

THE PURPOSE OF A STEAM TRAP.

Editor "Domestic Engineering":—I wish that you would tell me the purpose of a steam-trap in the next issue of the paper.

Joliet, Ill. J. Haskins.

A steam-trap is used on steam-heating systems in order to prevent the escape of steam while allowing the water of condensation to escape or be returned to the system without interferring with the action of the steam.

These traps are for sale by numerous manufacturers and work at a pressure of from half a pound, or less, up to 100 lb. or more. On jobs where there is a line of radiation set at the same level as the boiler, they are very useful, their action enabling the radiation to heat properly. Various articles and cuts have appeared in this paper in the past two years illustrating this point, and if this information is not sufficient, let us know and we will answer more at length.

A "SWING"-JOINT.

Editor "Domestic Engineering":—We had a discussion in the shop the other day as to just what a "swing"-joint was. Will you kindly settle by defining it in the paper? J. H. C.

A "swing"-joint is called, sometimes, a swivel-joint. It is used for the purpose of providing for the expansion or contraction of piping. Manufactured joints of brass can be obtained or a joint can be made from the ordinary pipes and fittings, as may be necessary.

In placing the swing-joints they should be properly supported so as to allow free play of the pipes, and yet hold them so that no traps will occur. On especially long runs, the pipes will have to be anchored so that the expansion of the pipes will be forced into this joint, otherwise some of the expansion may come where it is least desired and do some damage to the piping where no provision has been made for expansion. We recall a case of this kind where the fittings cracked were very difficult to replace (from the position that they occupied) and no end of trouble was caused by the lack of foresight in anchoring the pipes properly.

NEW ENGLAND NOTES.

Massachusetts.

Milford.—Bids have been received by the charity department for plumbing at the town farm. Figures were not made public but it is announced that the bidders were John Powers, of Hopedale; Clark, Ellis & Sons, John E. Cooney and Staples & Gould.

Springfield.—Thomas F. Drake and Duane F. Drake, employed for the past fifteen years—the last two as partners—with Thomas J. Ryan, the plumber, on Market street, have taken over the business and will continue at the old stand. Mr. Ryan will continue to be connected with the firm in an advisory capacity.

Lynn.—The firm of Thompson, Randall & Libby, plumbers, located on Buffum street, is now known as Thompson & Libby. The change is due to the withdrawal of Albert E. Randall. The business will be continued at the old stand, the firm carrying on a general plumbing and heating business.

Lowell.—Scott & O'Day, the Appleton street plumbers, have just received a valuable cabinet of quartered oak, as a prize offered by the Good Manufacturing Co. during the recent national convention at Galveston, Tex., and won by the local firm. The cabinet contains 80 air-tight drawers with some 400 compartments, and is a very useful piece of furniture.

Lowell.—The plumbing and piping contract for the new convent of the Gray Nuns of the Cross in Moody street has been awarded to John J. Mullaney & Co. There were several bidders for the work, but Mullaney was the lowest.

Manchester.—Alex Sjorland has secured the contract to install the heating and plumbing in the new bungalow which is being erected for Luke Morgan. Mr. Sjorland also has the contract for heating and plumbing in the new Edward Height house on Desmond avenue.

Manchester.—E. S. Bradley is installing a heating-plant in the Center Stanley cottage on Vine street. He also has the contract for a pipe fence on the outer edge of the new sidewalk on Magnolia avenue.

Quincy.—The Norfolk county commissioners have advertised for proposals for plumbing, wiring, heating, ventilating the new court house in this city. One set of bids has already been received but it was not satisfactory to the commissioners.

Boston.—The journeymen plumbers of the city have notified the employers that unless they receive an increase of 80 cents a day before August 1st a strike will be declared. If their demands are granted, the plumbers will receive $5.20 for an eight-hour day.

Milton.—Frank R. Gibson, plumber, has added to his equipment a Maxwell runabout. This will enable him to answer calls more quickly and will undoubtedly prove of much value in his business.

Boston.—Acting Mayor Collins has approved a contract with the James Barrett Manufacturing Co. for furnishing and delivering 400 bubble drinking fountains.

Worcester.—Contracts for heating plants for two Worcester school buildings have been awarded by Superintendent of Schools G. C. Halcott. The contract for a new heating plant for the Elizabeth street school went to Nicholas J. Smith for $6,086 and that for the Thomas street school to M. J. Holmes & Co., for $4,431.

Springfield.—The W. J. Hyland Manufacturing Co., which brought suit against Mark P. Wells and trustees of the North Adams for $2,300 alleged to be due on a contract for plumbing and gas-piping in the Springfield post-office building, has won the case. The auditor awarded the Hyland Co. just $50 less than the amount sued for.

Newburyport.—The committee on public property has awarded the contract for heating and ventilating the new police station building to Albert B. Franklin, of Boston, whose bid of $1,471 was the lowest received. Other bidders and their figures were: Ordway Heating Co., $2,100; Hub Plumbing & Heating Co., $1,676.40; Stone, Underhill Co., $1,648; Eastman Heating Co., $1,489.

Connecticut.

Stamford.—The sub-contract for plumbing in the six-family house which is being erected for Michael Gill on Chapel street has been awarded to Max Davido. Leon Lesnowski is the general contractor.

New Milford.—A. H. Bolles' new residence is being fitted with modern plumbing throughout, the work being done by the New Milford Plumbing Co.

Stamford.—Hoyt & Jessop, of Darien, have the contract for plumbing the new factory which is being erected on Summer street for Eugene Ward.

Stamford.—The Stamford Heating & Plumbing Co. is to do the plumbing and heating in the two houses on Quintard terrace for Mrs. Sarah Conboy and Thomas McMahon.

New Britain.—The contract for installing a new ventilating system in the Raphael department store on Main street has been awarded to G. K. Spring & Co.

New Hampshire.

Milford.—The H. H. Barber Plumbing & Heating Co. has installed the machinery and plant for making cement-lined pipe. This is the only concern in this vicinity making this pipe, which is extensively used hereabouts.

Portsmouth.—The firm of W. E. Paul, of this city, is putting in the heating and plumbing system in the new Boston & Maine railroad station at Durham.

BUCKEYE CLIPPINGS.

Marietta, O.—The city council has adopted an ordinance providing for a set of rules and regulations for the making of stove-connections with the city gas-mains. The ordinance provides the manner in which the connections are to be made and for violations imposes severe penalties in fines. Other gas-heating apparatus come within the ordinance.

Athens, O.—Bids will be received August 10th by the board of trustees of the Athens State Hospital for two 125-h. p. horizontal tubular boilers complete, including breeching and a system of steam-piping. The plans for the work have been prepared by the Osborn Engineering Co., No. 20 West Broad St., Columbus, O.

Columbus, O.—Architect W. T. Mills has awarded the contract for the heating and ventilating systems in two old school-buildings at Alliance to the Fitzpatrick & Hoepfner Co., Columbus, O.

Columbus, O.—Bids will be received by H. S. Holton, director of public safety, August 3d, for the erection of a public-comfort station in Goodale Park.

Hamilton, O.—The board of county commissioners has appointed a heating commission to prepare plans and specifications for a new heating system for the court-house.

Columbus, O.—Dr. J. W. Clemmer, city health officer, is renewing his efforts, begun seven years ago, to provide Columbus with a public-comfort station. A statement issued from his office recently sets forth the arguments for such an innovation, and puts the matter up to the council to provide what he designates as one of the most necessary of municipal enterprises. The proposed convenience would be located in the state-house yard at the corner of Broad and High, and it would be wholly underground, in order not to spoil the appearance of the corner. Dr. Clemmer emphasized the fact that the station would be an underground affair, as it was the popular belief that a big superstructure would be built that killed the project five years ago. "The people are right in objecting to a building above ground," said Dr. Clemmer. "There is no need of it, and it would hurt the looks of the corner. But what we do need is a comfort-station, underground, in the most prominent place in Columbus."

WISCONSIN MASTER STEAM-FITTERS ORGANIZE.

In response to an invitation from the master steam-fitters of Fond du Lac, about 50 representatives from all parts of Wisconsin assembled at the Elks' club-house recently and organized the Wisconsin Steam-Fitters' Organization. The following officers were elected: President, M. E. Flaherty, Milwaukee; vice-president, J. F. Ahern, Fond du Lac; secretary and treasurer, Fred Kaufman, Milwaukee; sergeant-at-arms, Otto Biefeld, Watertown.

We will be glad to publish all news furnished by secretaries of plumbers' and steam-fitters' associations. We want you to feel that "Domestic Engineering" is your personal medium of intercommunication.

THE METAL MARKET

CONTINUED LARGE EXPORTS OF COPPER.

The almost record-breaking exports of last month, amounting to 30,000 tons, bid fair to be exceeded this month. For the first 19 days of the month they amounted to 18,000 tons, not taking into consideration the exports from southern points. This has had much to do with the firmness of copper, for consumers have not been buying very freely. Sales of Lake have been made during the week at 12.75 cents and electrolytic on a basis of 12.50 to 12.55 cents delivered in New York. The large holders of copper are not anxious sellers. They have been devoting their energies to cheapening of the cost of production. It may be that in time the sales end of the copper business will be subject to the same scrutiny that the metallurgical end has been for the past 10 or 12 years. As soon as the efficiency of the sales department equals that of the manufacturing end, prices will be more stable.

OLD IRON.

By many it is believed that the worst of the depression has passed, and from now on prices will be higher. Quotations are as follows:

No. 1 yard wrought, long	$11.50 to $12.00
No. 1 yard wrought, short	11.00 to 11.50
Heavy-melting steel scrap	10.75 to 11.00
Machinery cast	11.00 to 11.50
Wrought pipes and tubes	9.50 to 10.00
Malleable castings	10.00 to 10.50
Wrought turnings	6.25 to 6.75
Cast borings	5.25 to 5.75
Stove plate	8.50 to 9.00
Light iron	4.25 to 4.75

BUYING IRON FOR FORWARD DELIVERY.

Consumers of pig-iron, attracted by the low prices, are buying foundry iron for forward delivery. This is in moderate volume and most of the inquiries are for small lots. While there has been no real advance in quotation, the market is firmer and a great deal of the real cheap iron has been cleaned up. Some of the furnaces, which have had an unwieldly stock on their hands, have been noted as ready sellers and often a sharp bargain could be driven, particularly for a good-sized contract. One thing that helps the sellers considerably is the number of stacks out of blast and the fact that many of these will not go into blast until prices are much higher. As they see the demand equaling, if not exceeding, the active capacity, they feel sure of better prices and consequently are more independent as to sales and prices. Quotations are as follows:

No. 2 Southern foundry, Birmingham	$10.00
No. 1 Northern foundry, New York	$15.50 to 15.75
No. 2X Northern foundry, New York	15.00 to 15.25
No. 2 plain, Northern foundry, New York	14.50 to 15.00
No. 2 Northern foundry, Chicago	15.00

PIG TIN.

The price of tin has dropped at least 1½ cents during the last week. This is largely due to the arrivals of tin at American ports and the small consumption. During the first twenty days of the month, the arrivals at American ports amounted to 3,100 tons, and at that time there were afloat for ports in this country approximately 2,500 tons. Sales have been made during the week at 42 cents.

LEAD.

The market is firmer and the new high record at St. Louis for the year was made last week, when lead was sold at 4.40 cents. In New York, the quotation is unchanged at 4.50 cents.

SPELTER.

The market is dull, for sellers are unwilling to make terms and buyers will not pay more than 5.70 cents New York. This condition of affairs obviously cannot last very long.

CONTRACTS RECENTLY AWARDED.

Waukesha, Wis.—The Hayes-Kramer Co. has the contract for plumbing and heating in the new $20,000 gymnasium and school-building to be erected at St. John's Military Academy, Delafield, Wis.

Silverton, Ore.—At a recent meeting of the school board, bids for a heating and ventilating system for the school buildings were considered. Three firms from Portland and two from Salem were represented, and the contract was awarded to the Pacific Heating & Engineering Co., of Salem. The system will include a heating and ventilating plant for two buildings, garanteed to furnish each pupil with 30 cu. ft. of fresh air every minute, an entire change of air in each room every 20 minutes. The contract amounts to $3,500.

Orangeburg, S. C.—The court-house commission, appointed some time ago, has advertised for bids for installing a heating-plant in the court-house. The plant will have to be placed under the building, and considerable excavating will be necessary.

Independence, Mo.—The building at 111 S. Liberty St., owned by H. H. Wait, was damaged recently by fire. The portion occupied by the Wait Plumbing Co., of which Mr. Wait is president, suffered most, the interior of the building and the stock being damaged by water. Much uneasiness was felt by the business men in the neighborhood, as the conditions were favorable for the spread of the fire to other buildings on the public square.

Pueblo, Colo.—The law prohibiting public drinking-cups goes into effect on August 4th, and the city council has authorized purchase of a sanitary bubbling push-button fountain to replace the present type at the corner of Main and Pikes Peak avenue.

NEW YORK CONTRACTS AWARDED.

The state trustees of public buildings have awarded the following contracts:

The contract for the steam equipment of the capitol power-house now in course of erection on Sheridan avenue, Hawk and Orange streets, in Albany, N. Y. Also the steam and return connection between the power-house and the capitol and education building on Washington avenue, to Gillis & Geoghegan, New York City, for $202,053.

The contract for the electrical equipment of the said power-house, and the electrical connections between the power-house and the education-building, was awarded to the Lord Electrical Co., New York City, for $95,700.

We will be glad to receive news of the contracts you have obtained every week. "Domestic Engineering" will publish them.

PERSONAL MENTION.

E. V. Brigham, secretary and treasurer of the Union Sanitary Mfg. Co., of Noblesville, Ind., is spending his vacation at Eastern pleasure resorts. He is accompanied by his family.

Joseph Nelson, president and manager of the Jos. Nelson Supply Co., Salt Lake City, Utah, was in Chicago this week on his return from an extended trip in the East.

James M. Gilchrist, secretary and treasurer of the Indiana Supply Co., Indianapolis, is enjoying a tour of the great lakes attending the regatta at Duluth.

E. W. Puckett, of Fort Wayne, Ind., who recently organized the Interstate Mill Supply Co., has purchased the controling interest in the P. & H. Supply Co., and in the Fort Wayne Oil & Supply Co., both in Fort Wayne, Ind.

W. C. Bell, of the Watson Specialty Co., Terre Haute, Ind., who is popularly known as "Liberty Bell," was in Chicago this week calling on the trade. He was headed for the Great Northwest, his next stopping place being Milwaukee.

F. G. Harlin, formerly with the Humphrey Company, Kalamazoo, Mich., has recently connected himself with the Schild Specialty Company, Cleveland, O., as salesman in southern Ohio, Kentucky and West Virginia.

The Best Manufacturing Company, Cleveland, O., has recently engaged the services of two well-known specialty men. Allan H. Tripp will look after Chicago and the middle-western trade; Edward Harmon Ullrey will cover the eastern territory.

John J. Shinn, who a short time ago took charge of the San Francisco branch of the N. O. Nelson Manufacturing Co., is now becoming well acquainted with the trade in that section and is getting well settled at his new post. Business in staple lines with this firm is in good shape and quite recently some heavy sales of pipe-cutting and threading machinery have been made, prominent among which have been sales to the John G. Sutton Co., San Francisco, which has fitted up a fine modern shop.

Willard Chamberlin, the Pacific Coast representative of the Standard Sanitary Manufacturing Co., is now in southern California on a brief business trip. Theodore Ahrens, president of this company, who was on the coast a short time ago, has returned east, going by way of the Yellowstone National Park.

Edward H. Kinney, of the George H. Tay Co., San Francisco, Cal., was in Los Angeles recently, having gone there to meet relatives who were on the way to San Francisco from the east for a short stay.

T. M. Jones, formerly salesman for the Trimble & Lutz Supply Co., of Wheeling, W. Va., is now looking after the mill supply business for the Standard Mfg. Co., of Pittsburgh.

Frank Dumhoff, who has covered northeastern Ohio and northwestern Pennsylvania for the Standard Mfg. Co. for eight years, has quit the road to engage in the automobile business at Youngstown, O. His territory will be covered by Harry Harte, who is an old plumbing-supply man from Pittsburgh.

A. W. Magill, the well-known sales-artist of the Kewanee Boiler Co., Kewanee, Ill., was seen on the "Theodore Roosevelt," on Wednesday, at the Chicago Master Plumbers' outing in a speechless condition. Not the way you think it, Mr. Mal Y Pense. Just a bad cold, that's all. We know the bottle only contained maple syrup and paprika because we were a goat, yes.

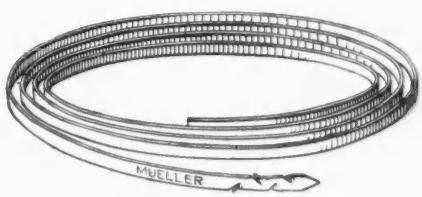
THE FRANK PROX CO. ENLARGES ITS PLANT.

The Frank Prox Co., of Terre Haute, Ind., has completed its new plant in that city, and expects to move into it about August 1st. The plant is located on an 8½-acre tract of land on South First street, and consists of three one-story buildings of modern concrete construction, having an aggregate floor space of 47,600 sq. ft. With its increased facilities, the company expects to increase its output of heating boilers as well as other lines manufactured.

THE MUELLER SEWER-ROD.

The H. Mueller Manufacturing Co., Decatur, Ill., and New York City, has placed on the market an effective sewer-rod (Hymes patent), and it is proving very popular with the trade.

It is made of spring steel in lengths of 25, 40, 50, 60, 75 and 100-ft. The working end is pointed and back of it are a number of protruding barbs. By working the rod



When Not in Use.

back and forth through the pipe, the spear point and barbs cut through and dislodge any obstructions. The rod is flexible enough to follow the irregularities of the pipe, yet stiff enough not to buckle.

The rod coils up when not in use. It is a most convenient tool and renders unnecessary the digging up of a sewer or soil-pipe if the obstruction is within reach from a clean-out. It also renders less offensive an otherwise disagreeable job.

IMPROVEMENTS BY THE McCRUM-HOWELL CO.

Extensive improvement and additions are being made to the Norwich, Conn., plant of the McCrumwell-Howell Co., increasing the capacity of the plant 50 per cent, at a cost of $20,000. The work is well under way, the east side of the old cupola building being torn out to prepare for the installation of the new cupola.

The additions include a new cupola, together with a steel bridge, which spans the Central Vermont railroad tracks, and an elevator for hoisting pig-iron, coke and other foundry materials, and an entire new cleaning-room equipment. This bridge and elevator permits the taking of the material from boats at the factory-side and getting it speedily and easily to the cupola and foundry, without being obliged to carry the material in barrows across the tracks of the railroad.

The warehouse capacity is also being increased by the installation of an industrial railway, which facilitates the handling of finished material from machine and assem-

bling-departments. Additional shipping capacity is being provided, so that several cars may be loaded at a time, and a new team of draught horses has been purchased.

It is of interest to say that the installation of the new cleaning-room equipment is dustless, the tumbling barrels being exhausted by a fan pressure blower through a Glassford dust separator. This removes from the machine-shop a very aggravating feature, and puts this department of the plant in a healthful condition.

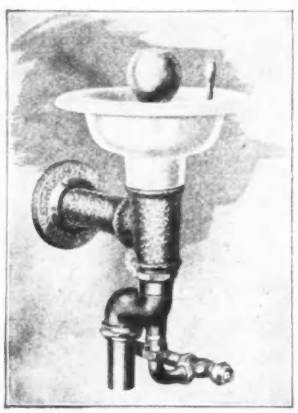
BUBBLING HEADS OF BRASS AND CHINA.

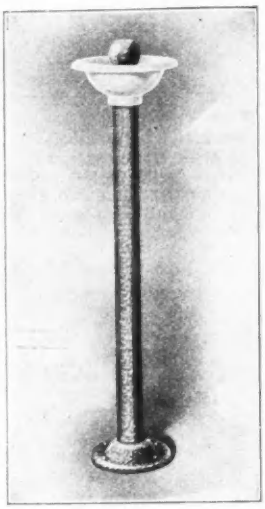
Who wanted bubbling heads ten years ago? Nobody. Who are responsible for this new demand for bubbling heads? The germs. The doctors have declared universal war on the germs and their chief lurking-place, the common drinking-cup, is the first point of attack. Hence the bubbling fountain and the bubbling head.

It's a blind plumber who can't see a profitable selling possibility in these products. They can be purchased in scores of styles, suitable for every possible public and private need—for the public park, the hotel, the bank, the office building-lobby, the theater entrance-hall, the kitchen and the bath-room.

The Rundle-Spence Mfg. Co., Milwaukee, Wis., is making a specialty of not only supplying complete sanitary

Two New Bubbling-Heads.





drinking-fountains, but also a great variety of bubbling-head attachments, whereby fountains already installed may be converted into the sanitary kind, and by means of which sinks may be supplied with bubbling attachments. Two of these we illustrate herewith. Fig. 1 shows a bubbling-head with a cast-iron roll rim, enameled all over roll, or galvanized-iron bracket. The cast-brass bubbling-head is furnished with a self-closing attachment, and is provided with a rough brass combination supply and waste fitting. Fig. 2 shows another adaptation of a galvanized-iron pedestal, 36 in. to top of the bowl. The galvanized-iron supply to the floor is furnished with a special tee connection. The pedestal may be secured in any height. In Fig. 1 the diameter of the bowl is 7 in., with a depth of 3½ in., and in Fig. 2 the measurements are 6 in. and 2¼ in., respectively. The company is issuing a number of leaflets illustrating its various types of bubbling-heads, which can be secured upon demand. In writing for these, mention "Domestic Engineering."

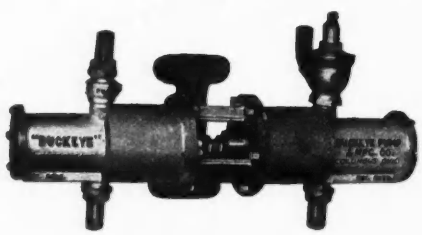
"COMMON-SENSE HEATING AND SANITARY PLUMBING."

"Common-Sense Heating and Sanitary Plumbing," is the name of a booklet recently issued by the Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y., attractively printed in three colors, and containing a very handsome double-page illustration of the great plant of the Pierce company. The booklet is divided into two parts, one devoted to boilers and the other to sanitary plumbing goods. In this the Pierce hot-water and steam boilers are described and illustrated very effectively, and also the thermostatic devices attached thereto. All the different types of boiler-construction are shown. In the plumbing department, attractive display is made of vitreous china and enamel-ware products and showers. The booklet is attractively worded and well arranged, and will be of interest to every plumber and steam-fitter. It can be obtained from the Pierce company for the asking. Mention "Domestic Engineering" when writing.

THE "BUCKEYE" WATER-LIFT.

The Buckeye Mfg. Co., 189 W. Broad St., Columbus, O., has received from the commissioner of patents an allowance on trade mark for the word "Buckeye" as referred to water-motors. The company has therefore issued an interesting booklet describing the "Buckeye" water-lift. This is a hydraulic engine, operated by the city water-pressure, designed to pump soft or rain water from a cistern and directly into the house-pipes for domestic use.

The "Buckeye" presents several interesting features. The connections on both the power and suction ends are straight up and down, thereby saving time in



The "Buckeye" Water-Lift.

installing. The check-valve on the pump-discharge does away with the necessity of placing a check on the line. It also prevents any back-pressure on the motor from the hot-water tank. The "Buckeye" water-lift has only seven cup-leathers and two stuffing-boxes. The booklet contains complete description of the apparatus, sectional views of its construction and plans and suggestions for its installation. A copy of the booklet can be obtained upon request. Mention "Domestic Engineering" when writing for it.

SPECIALIZED MAKING OF PATTERNS.

The Cleveland Castings Pattern Co., Cleveland, O., has just issued a neat booklet advertising its profitable patterns for stoves and heaters. This company is the successor to the Gobeille Pattern Co., of Cleveland, and has greatly developed the business since taking over the industry. Special attention is devoted to the working out of the mechanical principles involving efficiency and fuel economy, and the finished appearance of the product. Both of these have to be subordinated in great measure to the profitable manufacture of the patterns. The Cleveland Castings Pattern Co. does its work in reconciling these sometimes widely opposed factors. Familiarity with the ideas of the trade enables them to submit detailed designs and drawings singularly helpful to the inventor and manufacturer. The booklet illustrates and describes the different types of patterns made, and can be secured upon application to the company. In writing mention "Domestic Engineering."

ORGANIZED SAN FRANCISCO STEAM-FITTERS ELECT OFFICERS.

The San Francisco Steam Fitters' Union, recently organized, has elected the following officers: President, I. S. Delehanty; vice-president, J. Jessup; secretary, John E. Ingram; treasurer, E. Brushaber. Executive board—W. Reed, J. Rooney, M. Lyons, W. Cashel, E. Brushaber. Charter committee—J. S. Delehanty, M. Lyons, J. P. Jones, E. Brushaber and John E. Ingram; sentinel, R. Wilson.

THREE ATTRACTIVE HEATING DEVICES.

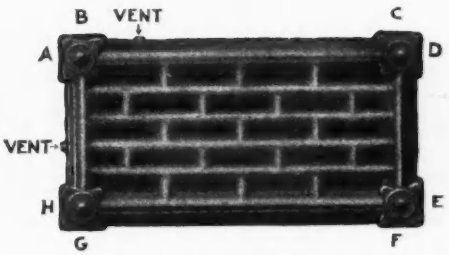
The United States Radiator Corporation, Detroit, Mich., is sending out two special booklets, one describing its Capital Solar improved boilers, and the other presenting the United States radiators.

The first shows the internal and external construction of the Capitol Solar boiler, and illustrates and describes its specific parts. The halftone of the internal view shows in a very effective way the fire-travel. The features that distinguish the Capitol Solar improved type of boiler are outlined under seventeen heads.

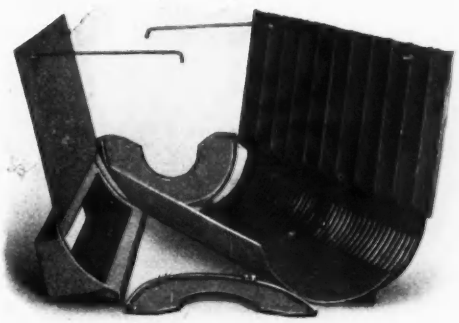
The second booklet is devoted to the Triton-pattern radiators, manufactured in two types, the ornamental and the plain. The outside barrel-radiators is of triangular shape, the contention of the manufacturers being that it provides a more rapid radiation of heat from each square inch in that surface. The inside barrels on the three, four and five-column radiators are small, the great amount of heating-surface being thus placed in the outer heaters, where it is much more efficient. The air-passages between the sections are large, providing a quick and easy passage for air through them, this being conducive to effective radiation.

We note three specialties which will will be interesting to our readers—the Athenian pantry-radiator, the Athenian wall-radiator and the Triton box-base.

Athenian Pantry Radiator.



Athenian Wall Radiator.



Triton Box-base.

The Athenian wall-radiator is winning hosts of friends in the building field. One of its special features of construction is that its barrels are inter-connected at close intervals by staggered cross-tubes, as illustrated. This overcomes several common difficulties in radiator-efficiency. The most notable of these perhaps is air being cut off from the air-valve when steam or hot water enters. The idea of the manufacturers is to provide full radiation from every inch of radiating surface. Wall-radiators of this type are displacing in many cases the ordinary pipe-coil system. The pattern of the wall-radiator is neatly designed and it occupies a limited space.

The Athenian pantry-radiator is made up of 7-ft. sections of the Athenian wall. It forms a very efficient heater and at the same time is a very handy article for residences, restaurants, cafes and club-houses. Dishes placed upon it can be kept warm, while at the same time the radiator is doing its work in heating the room.

The Triton box-base is an appliance for attaching to a direct radiator for converting it into a direct-indirect. It permits outside air to be passed through the radiator before entering the room, and the damper-arrangement is a very ingenious one, so that the separate floor-damper is not required when the cold air is brought in through the floor.

Direct-indirect radiators are used to a great extent in hospital work and school-work, where the heating system does not include forced ventilation. The Triton box-base can be connected up very quickly and is also very substantial.

Copies of both these booklets can be obtained from the United States Radiator Corporation for the asking. You can do us a service by mentioning "Domestic Engineering" when you write for them.

CATALOGS AND PAMPHLETS.

The New York Central Iron Works Co., Geneva, N. Y., has issued to the trade its latest catalog and price-list, No. 25, of the Dunning tanks. These tanks are made for every possible use—for hot water and cold water storage, for pure water for household use, for fuel-oil, for gas, for pneumatic water-systems, for elevator-tanks and fire-sprinkler systems, and they are provided with or without coils. They are made round, square or oblong, and the catalog describes various things to be considered in choosing tanks for any specific purpose. The Dunning tank-heaters and pneumatic tanks receive special consideration. Our readers can obtain a copy of this catalog upon request by mentioning "Domestic Engineering."

The Rapid Heater Co., Grand Rapids, Mich., is issuing a little booklet describing its different types of gas water-heaters. These are attractively illustrated and a careful presentation is made of the specific parts of the heater which contribute to its particular efficiency. Copy of this booklet can be obtained upon application to the company. In writing mention "Domestic Engineering."

A neat little brochure is being sent out by the Electric Heat Regulator Co., Minneapolis, Minn. It presents in an effective way by illustration and description the regulator as a whole, its thermostatic control, and tells clearly how it acts and what it will do. This instructive leaflet can be secured upon request to the company. Mention "Domestic Engineering" when writing.

The Humphrey "Herald" is a small booklet issued by the Humphrey Co., Kalamazoo, Mich. It contains a number of ideas for the increase of gas water-heater business. The company will be glad to send copies of it to those desiring it.

TWO NEW KEWANEE BOOKS.

The Kewanee Boiler Co., Kewanee, Ill., has excelled all its previous printed productions in its issuance of its catalogs Nos. 58 and 59. Whether intentionally or not, the trade-mark on the covers consists of a large K surrounded by a circle, which to the least observant will read "O. K.," and after an examination of these catalogs you will think they are. No. 58 describes the Kewanee fire-box boilers. This takes the reader at once into its confidence concerning the careful construction of these boilers, the manner of their rating, and their efficiency in service. The illustration supports the reading matter effectively, and the catalog concludes with an interesting presentation of a special smokeless furnace and some useful suggestions to users of the Kewanee steam and hot water products.

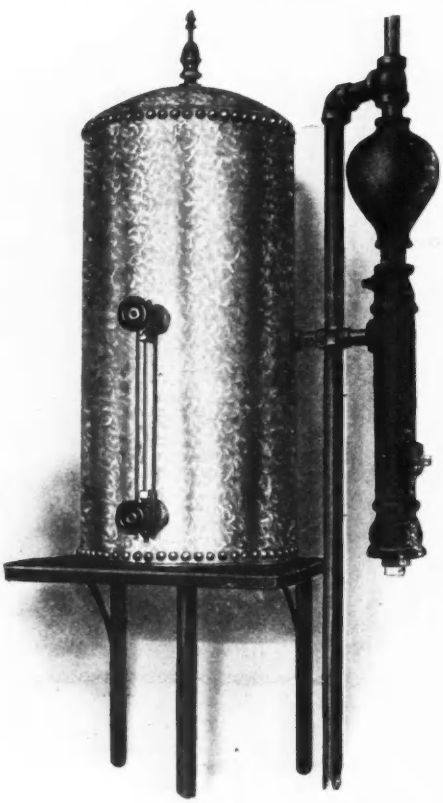
Catalog No. 59 is well ahead of its time. The publication, however, is timely enough, for it will take several years before the public is sufficiently educated to the advantages of individual destruction of garbage. Catalogs like the Kewanee production herewith considered will do much to provide the handlers of garbage-burners with the necessary arguments by means of which they can develop the business in their localities. In the Kewanee water-heater garbage-burner, the fire is started on the lower grate, the garbage being thrown in an upper chamber. A by-pass to the smoke exit provides for the removal of the odors of the smoldering refuse with the smoke

and burning gases. Handsome halftones illustrate the internal construction and operation of these garbage-burners, and the description is well worded and devoid of unnecessary embellishment. Copies of these two latest Kewanee productions can be obtained upon application to the company. Tell them that you saw it in "Domestic Engineering."

THE CRIPPS CIRCULATOR.

The Cripps circulator is designed to accelerate hot-water circulation and is a device, simple in character, placed at the side-opening of the expansion-tank of the hot-water heating system. It is so installed that the system is entirely closed by means of the mercury trap between the overflow and the tank, an air-compression being obtained in the tank itself and a slight pressure on the system as a whole.

The Cripps circulator operates on a compression of air in the tank above the water-line, the expansion-tank, a constant of pressure being maintained under the varying



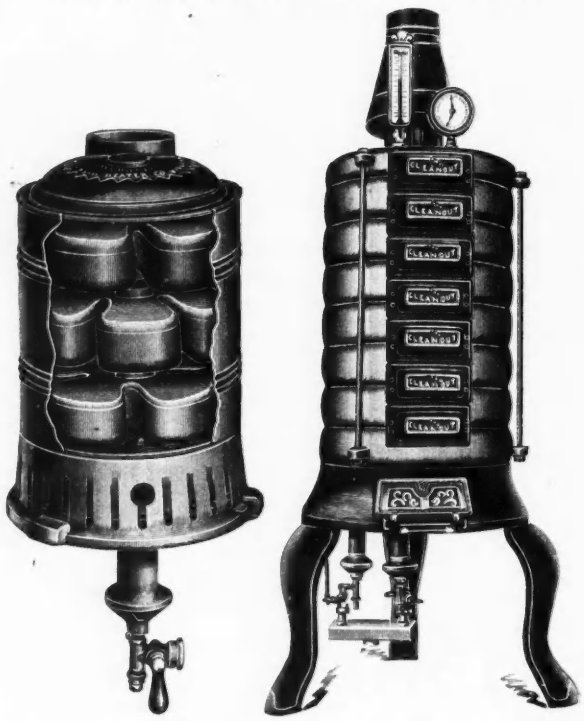
The Cripps Circulator.

temperatures. The circulator accomplishes its accelerative function by reason of the higher boiling-point of water under pressure. At a 10-lb. pressure, such as may be secured with the mercury seal, the boiling-point of the water is 235 deg. F. Hence greater heat, more rapid water-movement, a quicker return to the boiler and consequent fuel-economy in the reheating.

The A. G. Cripps Mfg. Co., Akron, O., manufacturer of the Cripps circulator, recommends the usual amount of radiation and boiler-capacity, but claims that the circulator will enable the steam-fitter to cut down his pipe, fittings and valve-sizes so as to effect material reduction in cost of labor and material. Furthermore such reduction in sizes will appeal to the customer as it cuts down the quantity of water to be heated. The Cripps Mfg. Co. has just issued a neat booklet describing the circulator and its action in detail. This booklet can be obtained upon request. Mention D. E. when writing.

A "COMET" AND A BUNGALOW.

The thought of a comet acting in connection with a bungalow, would fill the average householder with dismay, but the Mustee Water Heater Co., Cleveland, O., entertains no such fears, for it boldly announces its intention of putting "Comets" into bungalows, and houses, without the slightest possibility of endangering the assets of the fire-insurance companies. Furthermore, the company's "Comets" and bungalow-heaters are intended to furnish a specific form of domestic service. The "Comet" is the pyrotechnic name of one of the Mustee Water Heater Co's. leading lines in water-heaters. It is made of cast-iron sections, of Erin-go-bragh shape, each section being in the form of a five-leaf clover. It's Erin-go-bragh shape, because 'it is something different, and to be different is the Irishman's privilege. The leaves in each section are set alternately with those above and below, staggering the heat in such a manner that it strikes direct on the flat surface of each leaf. The company claims that this division of heating surfaces results in a more rapid method of heating than that which can be obtained by the use of a spiral or horizontal coil. The heater is jacketed by two casings, the outer one being of polished black iron and the inner one of galvanized-iron. The two casings are separated by a heavy sheet of asbestos paper, for purposes of heat-conservation. The valves on this heater can be easily



The "Comet" Heater. The Bungalow Heater.

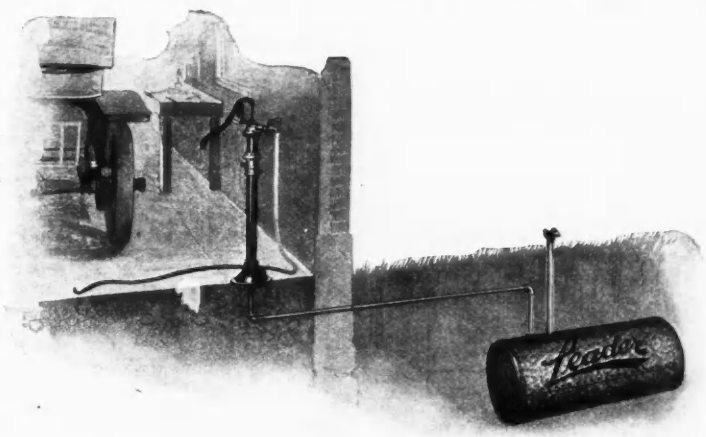
adjusted for natural or artificial gas. In its construction the "Comet" has been particularly adapted to the effective handling of water containing alkali, lime, or other foreign substances. All parts of the heater are interchangeable, and sections may be added or substracted to increase or decrease the capacity of the heater.

The bungalow-heater is designed to be a house, terrace or bungalow heater. This heater is made of circular cast-iron sections, connected by push-nipples. All sections are interchangeable, and it is equipped with a double burner to ensure rapid heating and gas-economy. The Mustee Water Heater Co., manufactures an extensive line of gas water-heaters for supplying hot water for domestic purposes, and for heating all kinds of buildings. These are made in various sizes to take care of from 200 to 600 ft. of direct radiation. Literature concerning them can be obtained from the company. In writing, mention "Domestic Engineering."

GASOLINE STORAGE OUTFITS.

The use of gasoline in large quantities for private or public garage use, or for stores, warehouses or factories, demands that for fire-protection there should be safety in the storage of the gasoline. The installation of gasoline storage-outfits has already offered to plumbers and steam-fitters a profitable opportunity of business-development. The safest method of storage is a steel tank underground, with suitable pump and connecting-pipes. Such a system is being placed on the market with considerable success by the Leader Iron Works, Decatur, Ill. The tank is specially built for this purpose, being heavily galvanized inside and out, and has reinforced openings. Air-pressure is not used in forcing the gasoline from the tank, the pump operating by suction. Gasoline left in pump or piping can be returned to the tank by tripping the valve of the pump.

Gasoline storage-outfits of this kind can readily be sold with the plumbing equipment to those who are installing such garages, and the plumber is the logical man to sell these specialties. President Dreyfuss selected the "Pittsburg" water-heater and had it installed in the dressing request, and will be glad to furnish any additional details concerning installations which may present unusual features. By writing today you can secure the fullest information concerning these things, and knowledge gained in this way may be turned to profit at the most unexpected times. When writing to the Leader Iron Works, put "D. E." at the end of your letter.



Showing the Installation of a Gasoline Storage Outfit.

BETTER WRITE BEST.

The Best Manufacturing Co., Pittsburgh, Pa., has just put out something extraordinarily good. It is a neat book of standard tables of valves, fittings, flanges, pipe, bends, etc. A very large amount of information is contained in very little space. These tables are printed on cloth so that the book will stand very severe working service. The tables have been brought up-to-date, and are thoroughly reliable. For laying out piping plans, the plumber and steamfitter will find this work very convenient. All descriptions and prices have been left out. Only such dimensions have been given as are required to design a piping layout. You can get a copy by writing at once to the Best Manufacturing Co. Mention "Domestic Engineering" when you write.

MORE HOPEFUL SITUATION IN CHICAGO.

Many in the trade are now believing that the strike difficulties between the plumbers and steam fitters will soon cease to exercise their baneful influence on building affairs. It is prophesied by those in the know that things will just grow back to the old grooves even if no definite settlement is agreed on by the contending parties.

"PITTSBURG" WATER HEATERS IN NEW BASE-BALL PARKS.

With practically every major league baseball club in the country possessing new parks and plants, now constructing them or contemplating doing so, the subject of players' comfort and sanitary arrangements in general has come up.

Every trainer of athletes recognizes the value of frequent hot baths as a means of keeping men in prime physical condition. Indeed, it is hard to overestimate the value of pure hot water as a preventative or corrective of the many ills to which human flesh is heir, and especially professional athletes. As a result nearly every big park is now equipped with up-to-date water-heating contrivances.

President Barney Dreyfuss of the Pittsburgh National League club, set the pace in the erection of a mammoth million-dollar baseball park—Forbes Field. It seemed the last word in athletic stadiums and was made ultra-modern by the use of every improved device obtainable. Among these specialties, President Dreyfuss selected the Pittsburg water-heater and had it installed in the dressing rooms used by the home club and also in those used by the visiting clubs, which are located under the steel and concrete grand-stand, which is known everywhere as the largest in the world.

Following the erection of Forbes Field new parks were built by the Chicago American League club, the Cleveland Americans and the Indianapolis and Toledo clubs of the American Association. Previous to that the Philadelphia Americans erected the costly and spacious Shibe park, hardly less ornate, commodious and expensive than Forbes Field.

It has been only a matter of a year or two ago when the officials of the Pittsburgh club held a vigorous protest with the late President Harry C. Pulliam of the National League against the ancient and unsatisfactory accommodations furnished the players at the club house in West Side Park, Chicago, the home of the "Cubs."

President Charles W. Murphy of the Chicago Club was severely reprimanded for inattention to this big item and it was not long before conditions showed a vast improvement. In this pleasing change it is claimed that the "Pittsburg" water-heater was a prominent factor.

The plans of the Forbes Field came to be the criterion by which the other new parks were built. Perfection had been reached and the ideas presented there were copied. With the grand stand, etc., patterned after Forbes Field, the plumbing fixtures and other incidental appliances that go with up-to-date ball parks and club houses were copied.

PACIFIC COAST LETTER

San Francisco.

One of the most striking exhibits that is being studied by the educators of the country, who are now here attending a meeting of the National Education Association, is the California State Sanitary Car, which is parked this week on East street, near the Ferry Building. This car is filled with exhibits showing proper and improper methods of sewage-disposal, maps showing the pollution of streams, methods of communicating diseases, etc. This car left Sacramento on June 10th on a trip down the San Joaquin Valley, reaching Los Angeles in time to be placed on exhibition during the convention of the American Medical Association. The exhibits in this car have been viewed by 100,000 persons in a year's time and have resulted in much more attention being paid to sanitation, especially in country districts and in towns where there are no sewer systems. The car will be kept in this city for some time, as a number of important conventions will be held here this month, bringing great crowds.

That there will be a great revival in building operations here within a short time is the opinion of architects, many of whom state that they now have more work on their boards than has ever been the case before. In spite of the fact that residence work has been a leading feature of operations during the past six months, the record for that period shows that permits have averaged about $2,500,000 a month during that time. This record is considered an unusual one, especially when it is considered that much building has been held back by the failure of the directors of the Panama-Pacific International Exposition to name a site for the 1915 fair. When this selection is finally made there will be a rush of building in the vicinity of the fair grounds, and there is every reason to believe that the building record for the last six months of the present year will exceed that of the first half of the year. Work is soon to be commenced on a number of structures over 10 stories in height in the downtown district, and a number of large contracts in the plumbing and heating line will soon be let. Of late small though numerous contracts have been the rule, but it is now anticipated that the large shops will again have some important jobs on hand.

Municipal work is still attracting considerable attention here and a number of important contracts will be let shortly, especially for work on school buildings. Plans for the plumbing and heating work in the new Polytechnic High-School building are being prepared, as are those for the work on the Girls' High School. A long lease has been taken on a temporary city hall, and it will probably be several years before work on a structure on the old site is commenced. The new Hall of Justice will soon be completed, as well as the San Francisco Hospital, these being the largest structures to be erected by the city since the fire of 1906. In a report issued the first of the month by the Bureau of Architecture, it was shown that the plumbing work in the Adams grammar school was almost completed, the fixtures being 60 per cent set; the plumbing work in the Visitacion Valley school 55 per cent completed, with the heating and ventilating work completed in the heating and ventilating room; plumbing and heating work in the Peabody primary school completed; rough plumbing completed in Engine House No. 12 and Richmond police-station.

The Board of Public Works has rejected the bid of Dyer Bros. for the erection of a 500,000-gal. tank for the auxiliary fire protection system on Ashbury Heights, the bid offered being considered too high. However, the contracts for the fittings was awarded, this being secured by the Compressed Air Machinery Co. for $7,790.

David R. Campbell will shortly commence work on the plumbing of a seven-story building on Fourth street, near Minna, being erected by the O'Sullivan Estate, the contract for this work having been recently secured.

The store building on Fillmore street, formerly occupied by S. N. Wood & Co., is to be remodeled and another story added. It will be changed into an apartment-house and a modern heating system will be installed. Fred. H. Meyer is the architect.

The Pacific Heating & Ventilating Co., of San Francisco, has been awarded the contract for the installation of the heating and ventilating plant in the Princeton high school building at Princeton, Cal., the contract price being $2,690.

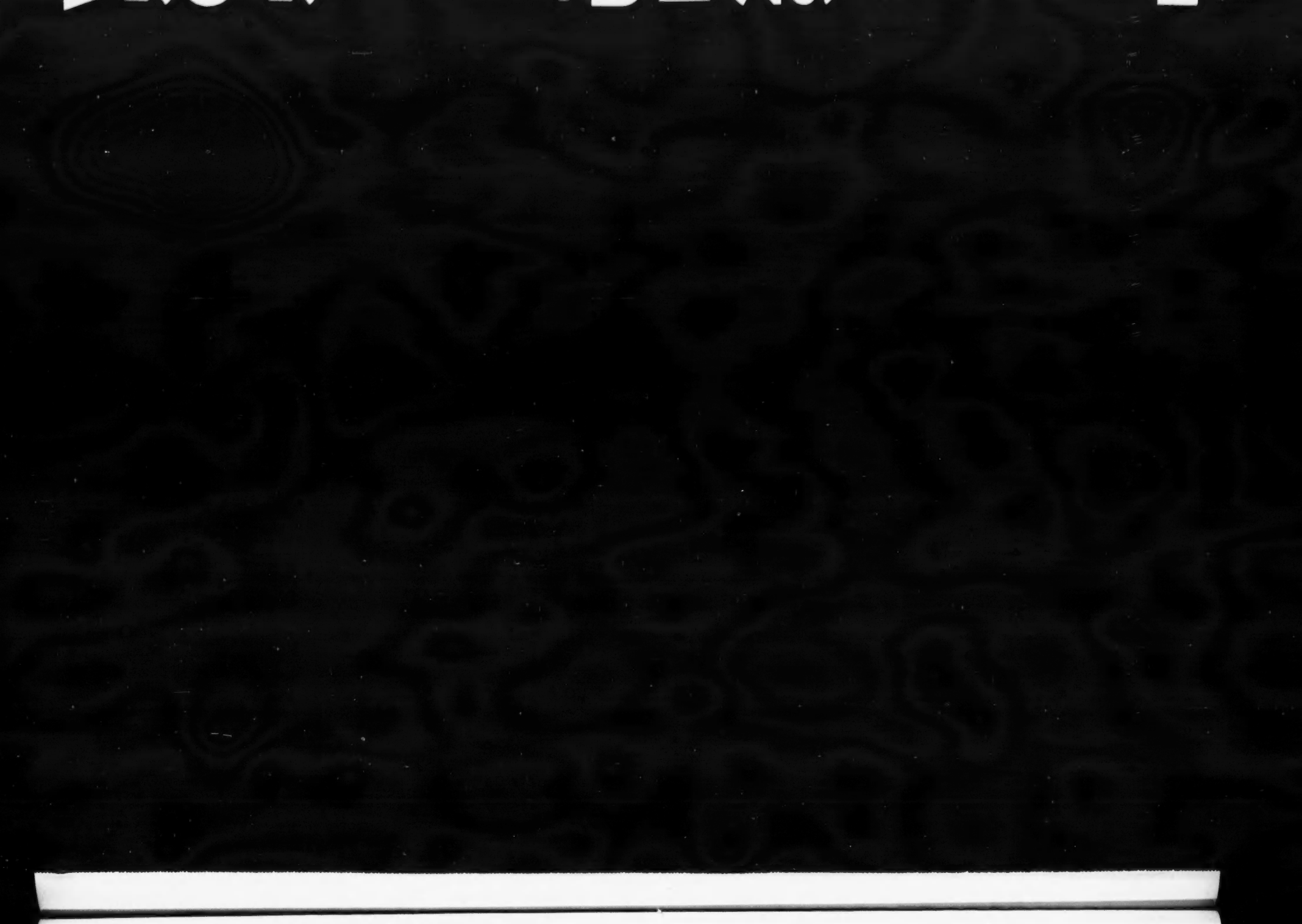
The matter of packing enameled plumbing goods intended for shipment to the coast is now receiving attention at the hands of several of the large manufacturers of the country and it is anticipated that in the near future goods sent to this section will be specially packed. The percentage of damaged goods received here is very heavy and the placing of these on the market has had much to do with conditions in the wholesale trade. Careless handling on the part of stevedores is largely responsible for the heavy loss sustained, and the packing that has proved satisfactory with goods shipped to other parts of the country does not seem to meet the requirements that must be met with goods sent to Pacific Coast points. An eastern manufacturer recently had a man visit this section whose duty was to pass upon damaged goods and to investigate the question of packing with the idea in view of devising a different system, if possible, whereby goods could be brought to the coast with less loss. Other firms are also looking into this question in hopes of reducing the quantities of damaged goods brought here. More damaged goods are marketed in San Francisco, perhaps, than in any other city of its size in the entire country, there being a number of stores enjoying quite a trade that carry but little else. Formerly these goods were marketed only in the large cities but now these firms are doing a wholesale business with firms in the interior and large quantities of damaged goods are being sent to the farming communities, where the price reduction makes results in ready sales.

Frank J. Klimm and Alex. Coleman are back from their trip to the national convention, as are the rest of the California delegation. Some of the members from southern California came home by way of San Francisco and made short stays in this city visiting friends.

The fine display of engineering supplies that has been maintained on the display floor of the George H. Tay Co. at Mission and New Montgomery streets has been moved to the new store that has been opened for the carrying of stock a short distance away. The space that is now available in the show-rooms will be devoted to an enlarged display of enameled-ware.

The John G. Sutton Co. has been awarded the contract for the installation of the heating system in the building in course of erection on Geary street, near Hyde, by the McKinnon Co. This concern is also to install the heating plant in the building on Fell street being erected by Selah Chamberlain.

The cruiser "South Dakota" has been transferred from this port to the Navy Yard at Vallejo, and while there a complete sprinkler system for fire protection will be installed. An automatic oil feed system will also be installed while the vessel is laid up.

The local engineering works and plumbing shops making a specialty of the installation of oil burners on ships are quite busy now in work of this character. The Pacific Mail Steamship Co. is changing a number of its vessels from coal to oil burners, the change having already been made in the "City of Para" and the "Aztec."

Berkeley, Cal.—George Stoddard, one of the best known plumbers of the leading residential suburb of San Francisco, has just completed the installation of the plumbing and heating plant in the apartment-house erected there by D. E. Bigelow. While there are but 24 apartments in the building, the work is noteworthy owing to many innovations that are installed. The heating-plant is especially well designed and provisions have been made for the use of steam for washing and for cooking purposes if desired.